THE IRON TRADE REVIEW

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IMPROVEMENT

NOTED IN SOME WEAK SPOTS IN IRON AND STEEL MARKET.

While Strong Demand for Other Products is Fully Maintained—New Cleveland Furnace.

The market continues fully as strong as it has been on such products as rails, plates and structural material, and on some products, such as sheets, pipe and boiler tubes, on which prices have been irregular and the demand limited, there is a noteworthy improvement.

Crude Steel Very Scarce. The scarcity of crude steel is more pronounced. In Chicago forging billets are held at a minimum of $35, while for quick shipment $39 per ton has been paid for carload lots. In the Pittsburg district one regular producer of steel is in the market for 5,000 tons. Consumers are unable to place orders to cover their requirements and there is no open market to quote. It is doubtful whether the two Columbus blast furnaces will be able to furnish enough iron for the Columbus Steel Works, which are to resume operation about Oct. 1 on sheet bars.

Pig Iron Is Strong. While few large sales of pig iron are reported, there is steady buying, with prices firm and tending upward. At Chicago inquiries aggregating nearly 75,000 tons, mostly for requirements of the first half of 1906, and embracing nearly every grade of iron, Northern and Southern, are pending. Iron is being shipped long distances to Chicago on the basis of $16.30 to $16.80, delivered in that city. There has been considerable buying of Lake Superior charcoal, one contract for 10,000 tons having been made by a Chicago car wheel interest. The United States Steel Corporation has purchased 10,000 tons of Bessemer pig at $15, valley, for late September delivery, and it is expected that the corporation will buy steadily during the remainder of the year. The usual quotation for No. 2 foundry is $15, valley, although some buyers hold to the opinion that $14.50 is high enough for large lots. At least one interest has advanced its quotation to $15.25, valley. The Southern market is stronger and sales below $12, Birmingham are now very rare. An advance by several large Southern producers is expected. About 25,000 tons were sold by Cincinnati agencies the first part of this week. The dullness in gray forge in the South is disappearing, and one sale for delivery over the first quarter of 1906 was made at $10.50 Birmingham. The prices in Southern Ohio are still somewhat below the market in other producing centers. The decision of the Cleveland Furnace Co. to build an additional stack, taken in connection with recent announcements of new blast furnaces to be erected in the Chicago district, indicates that the lake region is still to be a favorite location for blast furnace operations. The price of ferro-manganese is advancing, and for prompt delivery nothing under $53 to $54 can be done at Pittsburg.

More Steel Rail Orders. While it was not to be expected that the buying of rails would be continued at the unprecendented rate of the preceding two weeks, the tonnage placed within a few days has been very large. Among the orders of the week were the following: Philadelphia & Reading, 17,000; Tidewater Railway, 11,000; Chicago, Indianapolis & Louisville, 5,000; Chesapeake & Ohio, 5,000; Apalachicola & Northern, 7,500; Norfolk & Western, 10,000; Wheeling & Lake Erie, 5,000; Central New Jersey, 5,000; Oregon & Western, 10,000. At the Pittsburg mill rail tonnage taken on during the week amounts to about 150,000, including 60,000 tons from the Pennsylvania.

Advance of Plate Prices. Many mills have followed the example of the leading producer, and are now quoting uniformly 1.60c on plates up to 100 in. wide, which amounts to an advance of $2 per ton on plates 14 in. wide and under. Contracts recently taken for plates for lake vessels by the Illinois Steel Co., which has been very successful in meeting the requirements of ship builders, amount to 50,000 tons. Contracts for several additional large freighters are still pending.

Improvement in Sheets. Prices of sheets are not so irregular, and the demand is increasing. Buyers are showing an increasing desire to contract for next year, but the principal producer is not disposed to do so at current prices. Increased demand for boiler tubes is noticeable, and pipe, which has been weak and dull, shows indications of improvement.

Structural Material. Producers of structural material are not disposed to contract for next year, but some contracts have been made. The leading interest now has booked specifications for shapes which will require six months to roll. Mills of other companies are in similar condition.

Coke Prices Advancing. Furnaces are inquiring for coke for next year, and it is the general belief that higher prices will prevail. The plan of making contracts on a sliding scale, based on monthly averages of Bessemer pig iron prices, is being adopted in some cases. The scrap market in nearly all centers is strong.

THE WEEK IN IRON CENTERS.

PITTSBURG.

Increasing Scarcity of Crude Steel—Steel Corporation Buys Bessemer.

OFFICE OF *The Iron Trade Review*,
521 PARK BUILDING, September 20.

The scarcity of crude steel has reached a more acute stage. Consumers who have been enquiring in various quarters since the leading interest withdrew from the market more than two weeks ago have been unable to secure the steel, and there is no open market to quote. One regular producer of steel is in the market for 5,000 tons. The settlement prices announced today on October tonnages of billets and sheet bars under long time contracts governed by monthly fixing of prices are $25 on billets and $26 on sheet bars, an advance of $1 per ton over September tonnages. The tonnage of such billet contracts is relatively small, being chiefly special steels taking extras above the base price, while the tonnage of sheet bars under such contracts is quite large.

Demand for sheets has shown some improvement, and prices are less ragged, although hardly quotably higher. In wire products the tonnage is fairly good at the new prices announced last week, but the new business is at the inside prices, nothing of moment going at the nominal quotations.

It is pretty definitely settled that the Carnegie Steel Co. will start the Columbus Steel Works about Oct. 1 on sheet bars. The plant will make about 500 tons daily, and is operated only when all other sources of steel supply have been exhausted. The two Columbus blast furnaces have been in operation for about ten days.

Prices of ferro-manganese have been advancing. The local producer has withdrawn from the market on any tonnages in the past week, and the foreign producers are in complete control. Domestic producers are assured of an ample supply of ore for six months or more, but will need the product for their own operations.

Pig Iron.—In the past 10 days between 8,000 and 10,000 tons of Bessemer pig have been sold to various consumers, all at $15, valley, or $15.85, Pittsburg. The United States Steel Corporation late last week took 10,000 tons at this price from the Bessemer Furnace Association, for late September delivery, making its total purchase for September 35,000 tons. Next week it will probably open negotiations for a similar tonnage for October delivery, and it is likely to be a buyer of pig in somewhat similar quantities for months to come. The Columbus Steel Works are to be started, probably on Oct. 1, and the two Columbus furnaces, which have been in operation for ten days, will scarcely produce enough iron for this plant. Should the open market price of Bessemer pig advance much further, the steel corporation will probably take some of its furnace capacity now on ferro-manganese and put it on standard Bessemer, the question being simply one of arithmetic. There is indefinite talk of much enquiry in the Pittsburg district for foundry iron, but on enquiry it develops that tangible enquiry is quite limited for any delivery this year, while for next year some large consumers are simply sounding the market, and certainly show little disposition to pay prices now asked for next year, when they are covered for this year, and in some cases into next year, at decidedly lower figures. While nearly all furnaces are quoting on the basis of $15, valley, for No. 2 foundry, it does not appear that anything over hundred-ton lots has been sold at approximately this price, views of buyers being certainly not over $14.50 on large lots. Two sales of about 2,000 tons each of forge are reported in the local market, at about $14.75, delivered Pittsburg. Basic iron has been very quiet, and can still be quoted at $15, valley, or a shade thereunder. We quote:

Bessemer, Valley	$15.00 to $15.25
Bessemer, Pittsburg	15.85 to 16.10
No. 1 Foundry, Pittsburg	15.85 to 16.35
No. 2 Foundry, Pittsburg	15.35 to 15.85
Gray Forge, Pittsburg	14.65 to 14.75
Basic, Valley	14.90 to 15.00
Basic, Pittsburg	15.75 to 15.85

Ferro-Manganese.—The market has been advancing since the withdrawal of the local producer, and foreign producers feel that they have the market in their own hands. There have been a number of sales of fair-sized lots of foreign in the past week, including one of over 500 tons, the total being probably well over 1,000 tons, at advancing prices. A sale this week of between 100 and 200 tons was made at a price equal to about $52, delivered Pittsburg, the price being a trifle higher than it would have been for more extended delivery. On contracts for 500 tons or over the market standard at about $51, delivered Pittsburg, smaller lots being at higher figures. For prompt delivery nothing under $53 or $54 could be done.

Muck Bar.—The market continues quiet, and we quote nominally at about $27.25, delivered Pittsburg.

Skelp.—The market is firmer, some mills being sold up through the year. We now quote: Bessemer steel, grooved, 1.50c; sheared, 1.55c; open-hearth, grooved, 1.55c to 1.60c; sheared, 1.60c to 1.65c; iron, grooved, 1.60c to 1.65c; sheared, 1.65c to 1.70c.

Rails and Track Material.—The local mill has taken on about 150,000 tons of rails in the past week, including 60,000 tons from the Pennsylvania. The portion of the Pennsylvania order placed nominally with the Illinois Steel Co., will probably be rolled by the Carnegie Steel Co. also, on account of prospective congestion at Chicago. We quote: Fifty pounds and heavier, 500-ton lots and over, $28; carload lots and less than 500 tons, $30; less than carload lots, $32; light rails, 16-lb., $29 to $30; 20-lb. $27.50 to $28; 25 to 45-lb, $26; angle bars for standard sections, 1.35c; spikes, 1.75c.

Plates.—Nearly all the mills have followed the example of the leading producer, and are now quoting uniformly 1.60c on plates up to 100 inches wide, which amounts to an advance of $2 a ton on plates 14 inches wide and under, which were formerly held regularly at 1.50c. The change applies to both universal and sheared plates. Tonnage is quite satisfactory, but there is no immediate prospect of an advance. The Reading and Jersey Central roads have placed contracts with the Standard Steel Car Co. for 1,000 steel gondola and 100 steel flat cars. The rush of steel car buying is over for the present, with 45,000 to 50,000 all-steel and steel underframed cars bought on this movement, during the past month, selling the steel car plants probably well through the middle of next year, and perhaps for a considerably longer period. We quote:

Tank plates, ¼ in. thick, 6¼ in. to 100 in., 1.60c, f. o. b. mill Pittsburg. Extras are as follows per 100 lb.: Flange and boiler steel, 10c; marine, A. B. M. A., and ordinary fire box, 20c; still bottom, 30c; locomotive fire box, 50c; plates over 100 in. up to 110 in. in width not less than 5c extra; plates 110 in. to 115 in. wide, not less than 10c extra; 115 to 120 in., 15c extra; plates 120 in. to 125 in. wide, not less than 25c extra; plates 125 in. to 130 in., not less than 50c extra; plates 130 in. wide, not less than $1 extra; plates 3-16 in. thick, 10c extra; gauges 7 and 8, 15c extra; No. 9, 25c extra. Five cents extra for less than carloads. Terms net cash in 30 days, and for all points of delivery in the United States except Pacific Coast.

Merchant Bars.—The Carnegie Steel Co. is getting a good tonnage of rounds and flats from the new mill, which has been in operation for several weeks at the Clairton plant. Later this mill may turn out a considerable tonnage of small beams and channels. The other and smaller merchant mills at Clairton will be completed shortly. Deliveries are fairly

good, but mills are rushed on steel bars and have business in hand for several months to come. The bi-monthly examination in connection with the iron wage scale last Thursday disclosed an average price on shipments of bar iron during July and August of between 1.4 and 1.5 cents, so that no wage advance is called for, but the next settlement will likely show a much higher average. The market is now all of 1.65c, Youngstown, or 1.70c, Pittsburg, with the leading producer holding out for $1 a ton more. Tonnage has been quite satisfactory. We quote:

Bar iron, 1.65c to 1.70c, Youngstown; hoops, 1.65c and bands, 1.50c; both taking hoops and bands extra, respectively. Bessemer steel bars, 1.50c; open-hearth steel bars, 1.50c; plow and cultivator, 1.50c, net; channels, angles, zees and tees under 3 in. 1.60c. The following differentials are maintained on steel: Less than 2,000 lb., 10 cents advance; less than 1,000 lb. of a size, 30 cents advance.

Structural Material.—Some tonnage is being contracted for next year, but in general producers are indisposed to sell far ahead. In a number of cases regular contracts have been made for supplies of consumers to April 1 next and in a very few cases to July 1 next. For definite undertakings shapes are, of course, sold further ahead. The leading interest now has on books absolute specifications for shapes which it will take about six months to roll, and has never had so large a tonnage of absolute business on its books before. Every effort is being made to complete the new 22-in. structural mill at Clairton, but it is not certain that it can be finished and put in operation very much before the end of this year. It is hoped to turn out between 10,000 and 15,000 tons of shapes on this mill. We quote:

Beams and channels up to 15 in., 1.70c; over 15 in., 1.80c; zees, 1.70c; tees, 1.75c; angles, from 3 to 8 in. inclusive, 1.70c; universal and sheared plate, 6¼ to 14 in., inclusive, 1.50c; over 14 in., 1.60c, base.

Sheets.—Tonnage has improved somewhat, particularly in the jobbing end, and jobbers are somewhat disposed to advance prices. The leading interest is getting out a somewhat larger tonnage, and is this week operating about 85 percent of its sheet capacity. As noted last week, prices are firmer in that extreme concessions are not so common, but it cannot yet be said that the general market has advanced, and we continue to quote carloads for mill shipment at 2.25c to 2.30c for black and 3.30c to 3.35c for galvanized, No. 28 gauge. Corrugated roofing remains at $1.65 to $1.75 per square for painted and $2.85 to $2.95 for galvanized, No. 28 gauge, ordinary carloads. We quote nominal prices on sheets as follows:

No. 30, 2.65c; No. 29, 2.55c; No. 28, 2.40c; No. 27, 2.30c; Nos. 25-26, 2.25c; Nos. 22-24, 2.20c; Nos. 17-21, 2.15c; Nos. 15-16, 2.10c; Nos. 13-14, 2.05c; Nos. 10-12, 2c. Galvanized, Nos. 10-11, 2.35c; Nos. 12-14, 2.45c; Nos. 15-16, 2.55c; Nos. 17-21, 2.70c; Nos. 22-24, 2.85c; Nos. 25-26, 3.05c; No. 27, 3.25c; No. 28, 3.45c; No. 29, 3.70c; No. 30, 3.95c. Quotations f. o. b. Pittsburg, 30 days net, 2 percent off cash 10 days.

Wire and Wire Nails.—There is some business being done at the new prices, which, while lower than previous nominal quotations, are an advance in the open market, since it is no secret that by various devices, and particularly the extension of old contracts, wire products were being shipped at from $2 to $4 under old nominal quotations. We quote as follows:

Wire nails, jobbers' carload lots, $1.75; retailers' carload loas, $1.80, and less than carloads, $1.90; painted barb wire, $1.90 for jobbers in carloads; retailers' carloads $1.95, and less than carloads, $2.05, with 30c for galvanizing. Annealed smooth fence wire is held at $1.60, with the usual differentials to retailers for carloads and less than carloads. Quotations are all f. o. b. Pittsburg, 60 days, with 2 percent discount for cash in 10 days. Iron and steel cut nails, $1.70 to $1.75.

Merchant Steel.—Demand is quite satisfactory, and we quote prices unchanged as follows:

Cold rolled and ground shafting, 50 percent off in carload lots, and 45 off in less than carloads, delivered in base territory; tire steel, 1.0c; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flat, 1.50c to 1.55c; smooth finished machinery steel, 1.70c to 1.75c; toe calk, 2c to 2.05c.

Pipes and Tubes.—Demand is better, but the tonnage is in general unsatisfactory considering the activity in other lines. Prices remain at about four points or $8 a ton below the last official list promulgated by the leading interest.

	Steel		Iron	
Carloads	Black	Galv.	Black	Galv.
⅛ and ¼ inch	68½	53½	66½	50½
⅜ and ½ inch	72½	60½	70½	58½
⅝ to 6 inches	76½	66½	75	65
7 to 12 inches	71½	56½	70	54½
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch	60	48	58	46
½ to 4 inches	67	55	65	53
4½ to 8 inches	63	51	61	49
Double extra strong plain ends, ½ to 8 inches	56	45	54	43

MERCHANT BOILER TUBES, CARLOADS, 22 FEET AND UNDER.

	Steel	Iron
1 to 1½ inches	44	41
1¾ to 2¼ inches	56	41
2½ inches	58	46
2¾ to 5 inches	64	53
6 to 13 inches	56	41

Less than carloads, two points less.

Old Material.—The market has not been very active, but there is a little more demand on the part of rolling mills. Leading steel makers are not inquiring for large tonnages, but would probably be good buyers if the price was made right. Dealers, however, prefer to hold material where they can, in anticipation of a scarcity this winter. We quote the market unchanged as follows:

Heavy melting stock, $15.50 to $16; low phosphorus material, $18.50 to $19; rerolling rails, $16; cast scrap, $14.75 to $15.25; borings, $9.50 to $10; No. 1 wrought, $17 to $17.50.

Coke.—The market has taken an upward turn, there being an enormous consumption, due to pig iron production being at a much heavier rate, while foundries all over the country are busier. Considerable inquiry has already come out from furnaces for next year, and much higher prices will probably prevail on such business. In some instances contracts are being negotiated on a sliding scale, based on monthly averages of Bessemer pig. We quote standard Connellsville furnace coke for ordinary delivery at about $2 a ton, and 72-hour standard Connellsville foundry coke at $2.50 to $2.60. Shipments in the week ending Sept. 9 from the Connellsville region amounted to 13,441 cars, being 4,289 to Pittsburg, 7,687 to points west of Pittsburg and 1,465 to points east of Connellsville. Production in the week is estimated at 267,407 tons, against 267,179 tons the previous week. The production of the lower Connellsville region is estimated at 86,049 tons.

Russian Imports Increased.—In view of the fact that the Russian government has discontinued the levying of discriminating import duties on a number of United States products, the publication by the department of commerce and labor of our exports to Russia during the years in which these duties were enforced is of particular interest. These statistics show that on the whole our exports have increased during the period in spite of the duties. Cast iron exports rose from $19,955 in 1900 to $45,722 in 1903. Machinery exports increased from $223,529 in 1900 to $338,694 in 1903, and the combined exports from the United States of the articles discriminated against advanced from $501,558 in 1900 to $951,106 in 1903.

CHICAGO.

Business Enormous with Demand for Prompt Shipment Insistent.

OFFICE OF *The Iron Trade Review*,
1161 MONADNOCK BLOCK, September 20.

The most optimistic reports scarcely suffice to convey an idea of the extremely strong condition of the iron and steel industry in the West. Never before in the history of the business has there been such an enormous volume of buying as has been experienced in the last few weeks, and not for years have producers had to contend with such an insistent demand for prompt shipment of material as exists today. The experience of the South Chicago mill, which in the short space of two weeks has sold practically its entire output of rails for 1906—600,000 tons—is without parallel. Contracts for the plates and structural steel required in the construction of 10 large lake freighters, approximating 50,000 tons, have also been placed in the same period, the plates going to the South Chicago mill and the structural steel to Pittsburg. In addition, an almost equal tonnage of material for further shipbuilding construction is being figured on, the contracts for the boats having already been let. The tremendous activity of railroads in building new rolling stock and improving their roadbeds has created a demand of similar excessive proportions for track supplies, axles, wheels, bar iron and steel, structural shapes, steel and malleable castings, which, added to the building activity in Chicago and nearby points, has filled all the Western shops and foundries with work for months ahead.

There was a strong demand for pig iron last week, and prices of both Northern and Southern grades are expected to be advanced very shortly. Interest centered in the sale of 10,000 tons of Lake Superior charcoal iron and 5,000 tons of basic to local concerns, both of which were closed at good prices. Hoops were advanced $2 a ton on the 15th, making the local price 1.91½c. The advance in wire last week has been well sustained, buyers covering freely for future wants. Plates are stronger, and with the filling up and withdrawal from the market of several large independent interests, there has been some talk of an early advance in this product. Billets are scarce and firm, one local mill getting as high as $39 a ton for forging steel. Improvement is also noted in sheets and merchant pipe, and though it is still possible to buy on a basis several dollars a ton below the official schedules, there is not the disposition to sell at the ridiculously low prices that prevailed during the summer. Specifications for bars are heavy, one Western mill being from eight to nineteen weeks behind in deliveries, according to sizes. Scrap has strengthened with the general improvement, and dealers are holding out for high prices. There is a scarcity of coke due to the car shortage in the East, and the local market is very firm.

Pig Iron.—An inquiry which, in the aggregate, is not far short of 75,000 tons, was sprung on this market last week. Most of it related to needs for the first half of 1906, though there was a good sprinkling of orders for spot shipment and for deliveries running through the balance of this year. It embraced every grade of iron, Northern and Southern, and varied in lots from 10,000 tons downward. A large portion of it was closed up, but with the additional inquiries that have come in since that time, there is pending a tonnage fully equal to the original figure. This sudden influx of business has greatly strengthened the market, and an advance of 25 cents or 50 cents a ton is expected daily from the South. At present, the market is firm at $12 Birmingham for No. 2. Northern irons are scarce, and no local tonnage to speak of is being offered. One company reports it is out of the market until next July, another until the first of the year, while a third says it has nothing to offer and cannot tell when it will have. Eastern furnaces have taken advantage of this condition to ship freely into this market, selling on the basis of $16.30 to $16.80, Chicago, according to the freight rate. But for this activity, local prices would advance rapidly. There was considerable buying of Lake Superior charcoal iron during the week at $17, one of the contracts being the 10,000-ton order referred to above, which was placed by a local car wheel interest. The price has since been advanced to a minimum of $17.50. Basic iron has been in good demand, a local mill having followed its 5,000-ton order of three weeks ago, with another of the same amount which was placed last week with a valley furnace, the consideration being in the neighborhood of $16.80, Chicago. It is said the same company is in the market for another round lot of the same grade. Our quotations are as follows:

Lake Superior charcoal	$ 17.50
Northern Foundry No. 1	16.75 to 17.00
Northern Foundry No. 2	16.25 to 16.50
Northern Foundry No. 3	15.75 to 16.00
Northern Scotch Foundry	16.75 to 17.00
Ohio Strong Softeners No. 1	16.80 to 17.30
Ohio Strong Softeners No. 2	16.30 to 16.80
Southern Foundry No. 1	15.90 to 16.15
Southern Foundry No. 2	15.40 to 15.65
Southern Foundry No. 3	14.90 to 15.15
Southern Foundry No. 4	14.65 to 14.90
Southern No. 1 Soft	15.90 to 16.15
Southern No. 2 Soft	15.40 to 15.65
Southern Gray Forge	14.40 to 14.65
Southern Mottled	14.15 to 14.40
Southern Silveries (4 percent to 6 percent Silicon)	16.65 to 17.65
Jackson Co. Silveries (8 percent to 10 percent Silicon)	19.30 to 19.80
Alabama and Georgia Car Wheel	20.15
Malleable Bessemer	16.50
Basic Iron	16.05

Billets.—Forging billets are held at a minimum of $35 Chicago by local mills. For quick shipment, $39 a ton has been paid for carload lots within the past week.

Bars.—An advance of $2 a ton in hoops was made effective on the 15th. Brisk buying for next year's requirements has followed the announcement. Specifications on steel mills for bar shapes are very heavy, one Western mill reporting it is behind from two to five months on its different sizes. The demand for bar iron shows no diminution, all branches of the consuming trade specifying heavily and frequently. The local price is unchanged at 1.70c. We quote carload lots, Chicago delivery, as follows: Bessemer and open-hearth bars and bands, 1.66½c, half extras; soft steel angles, less than 3 x 3, 1.76½c; hoops, 1.91½c base, full extras. Hard steel angles, 1.60c. There is a brisk demand from store and prices are strong. We quote bar iron, 1.95c base, full extras; soft steel bars and bands, 1.85c to 1.90c base, half extras; soft steel angles, channels and tees, under 3 in., 1.95c to 2c; hoops, 2.30c base, full extras.

Sheets.—There is a better tone to the local market, and prices are a shade stronger. The filling up of a number of independent mills has lessened competition and made unnecessary the drastic concessions of a few weeks back. We have advanced our prices $1 a ton, or to the basis of 2.46½c for No. 28 gauge, and quote carload lots, mill shipments, Chicago delivery, as follows: Blue annealed sheets, Nos. 9 and 10, 1.81½c; Nos. 11 and 12, 1.86½c; Nos. 13 and 14, 1.91½c; Nos. 15 and 16, 2.01½c. On box annealed, one pass, cold rolled, we quote: Nos. 18 and 20, 2.21½c; Nos. 22 and 24, 2.26½c; Nos. 25 and 26, 2.31½c; No. 27, 2.36½c; No. 28, 2.46½c; No. 29, 2.56½c. We quote on lots from warehouse stocks, as follows: No. 10, 2.15c to 2.20c; No. 12, 2.20c to 2.25c; No. 14, 2.25c to 2.30c; No. 16, 2.35c to 2.40c; Nos. 18 and 20, 2.50c to 2.55c; Nos. 22 and 24, 2.55c to 2.60c; No. 26, 2.60c to 2.70c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.90c;

No. 29, 3c to 3.05c. Galvanized sheets, mill shipments, Chicago delivery, are quoted as follows: Nos. 12 and 14, 2.41½c; No. 16, 2.56½c; Nos. 18 and 20, 2.71½c; Nos. 22 and 24, 2.86½c; No. 26, 3.06½c; No. 27, 3.26½c; No. 28, 3.46½c; No. 29, 3.71½c. Jobbers' prices on small lots from store, are as follows: Nos. 10 to 14 inclusive, 3.10c; No. 16, 3c; Nos. 18 and 20, 3.10c; Nos. 22 and 24, 3.25c; No. 26, 3.50c; No. 27, 3.70c; No. 28, 3.95c; No. 29, 4.40c; No. 30, 4.85c.

Structural Steel.—New business keeps up to fair proportions, while specifications are active to an abnormal degree. The output of mills is far below the requirements of consumers, and it is expected the new mill of the Illinois Steel Co. will run on old orders for an indefinite period before any new business is taken for it. We quote carload lots, mill shipments, Chicago, delivery, as follows: Beams and channels, 3 to 15 in., inclusive, 1.86½c; angles, 3 to 6 in., ¼ in. and heavier, 1.86½c; angles larger than 6 in. on one or both legs, 1.96½c; beams larger than 15 in., 1.96½c; zees, 3 in. and over, 1.86½c; tees, 3 in. and over, 1.91½c; with the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. We quote prices from store as follows: 2.20c to 2.30c for angles, beams and channels, base sizes, with 2.30c to 2.40c for 18, 20 and 24-in. beams; tees and zees, 2.25c to 2.35c. These prices are for either random lengths or cut to specifications in excess of 5 ft.

Plates.—Shipbuilding interests have bought heavily in the last two weeks, fully 25,000 tons having been taken from this source alone in this period. About 30,000 tons more for the same consumption is pending. Some of the most important independent mills have filled up for several months ahead, and there is talk that prices may be advanced in the near future. Specifications from boiler makers, railroads, etc, are heavy. Prices are strong at following quotations: Chicago delivery, carload lots, tank steel, ¼ in. and heavier, up to 100 in. wide, 1.76½c, base Chicago; flange steel, 1.86½c base; marine steel, 1.96½c base, all full extras. Plates, 3-16 in. thick, $2 extra; gauges 7 to 8, $3 extra; No. 9, $5 extra. Less than carload lots, $5 extra. Jobbers report a good movement from local stocks with store prices firm. We quote on small lots as follows: Tank steel, ¼ in. and heavier, up to and including 72 in. wide, 2c to 2.10c; over 72 in. wide up to 100 in., 2.10c to 2.20c; over 100 in. wide, usual mill extras, 3-16 in. up to but not including 72 in. wide, 2.10c; 3-16 in., 72 in. wide, 2.35c; flange steel, 25c extra; heads, 25c extra.

Rails and Track Supplies.—With the exception of about 50,000 tons, the Illinois Steel Co. has sold its rail output for 1906, having on its books orders aggregating 550,000 tons. It has booked an immense tonnage also in spikes and track bolts. The company has greatly increased its output of track supplies in the last few months, but is putting in additional machinery that it may better cope with the enormous consumption that is expected in 1906. Light rails are very firm and have been advanced 50 cents a ton. We quote heavy sections in 500-ton lots, f. o. b. mill, $28; less than 500 tons to carload lots, $30; less than carload lots, $32. Light rails are as follows: 12-lb. sections, $29; 16-lb., $28; 20-lb., $27; 25-lb., $26; 30, 35, 40 and 45-lb. sections, $25, all f. o. b. Milwaukee mill. Track supplies, f. o. b. Joliet mill: Angle bars, 1.50c to 1.75c, according to tonnage; spikes, first quality, 1.80c to 1.85c; track bolts, 3¼ x ¾, with square nuts, 2.40c to 2.50c per lb., with hexagon nuts, 2.55c to 2.65c.

Merchant Steel.—A good volume of business continues to come forward each week. Specifications are extremely heavy, mills dividing their output pro rata among their customers. Prices are firm and without change. We quote carload lots, mill shipments, Chicago delivery, as follows: Spring steel, 2.10c; sleigh shoe, flat sizes, 1.71½c; concave and convex, 1.86½c; cutter shoe, 2.35c to 2.40c; smooth finished machinery steel, 1.91½c; smooth finished tire, 1.86½c; plow steel, 2.20c and upward, according to quality; toe calk steel, 2.21½c; railway spring, 1.86½c. Cold rolled shafting, 50 percent off in carload lots, and 45 percent in less than carload lots. Crucible tool steel, 6½c to 8c; special grades of tool steel, 13c and up.

Cast Iron Pipe.—The only contract of magnitude closed last week by the leading interest was that of the San Francisco Gas Co. for 3,000 to 4,000 tons of gas pipe. Several other large deals are pending. Prices are firm but without change. We quote carload lots, f. o. b. Chicago, as follows: 4-in. water pipe, $29.50; 6, 8 and 10-in., $28.50; 12-in. and larger, $27.50; with $1 extra for gas pipe.

Merchant Pipe.—Demand for wrought pipe is increasing and prices are strengthening. Competition, however, continues keen for the business offered, and discounts as high as 80 percent Pittsburg are easily obtained. For purposes of comparison, we continue to quote the card rates of the leading producer, which, while they are not adhered to, have never been officially changed.

MERCHANT PIPE.

	Steel.		Iron.	
	Black. Percent.	Galv. Percent.	Black. Percent.	Galv. Percent.
⅛ to ¼ inches	65.85	49.85	63.85	47.85
⅜ to ½ inches	69.85	57.85	67.85	55.85
¾ to 6 inches	73.85	63.85	72.35	62.35
7 to 12 inches	68.85	53.85	67.35	51.85

PLUGGED AND REAMED.

	Steel.		Iron.	
1 to 4 inches	71.35	61.35	69.85	59.85

EXTRA STRONG PIPE.

⅛ to ⅜ inches	58.85	46.85	56.85	44.85
½ to 4 inches	65.85	53.85	63.85	51.85
4½ to 8 inches	61.85	49.85	59.85	47.85

DOUBLE EXTRA STRONG PIPE.

⅛ to 8 inches	54.85	43.85	52.85	41.85

Boiler Tubes.—A good trade is reported from all sources, and prices are strong. We quote carload lots, Chicago delivery, as follows:

BOILER TUBES.

	Steel.	Iron.	Seamless.
1 to 1½ inches	40.35	37.35	53.00
1¾ to 2¼ inches	54.35	39.35	40.00
2½ inches	56.35	44.35	43.00
2¾ to 5 inches	62.35	51.35	
		Up to 4½ inches	50.50
6 to 13 inches	52.35	37.35	

Less than carload lots from store, as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches, inclusive	40	35	42½
1¾ to 2¼ inches, inclusive	50	35	35
2½ inches, inclusive	52½	35	30
2¾ to 5 inches, inclusive	60	47½	42½

Wire Products.—Business has come in very freely since the $1 advance a week ago. Especially active is the trade from the Northwest and Southwest sections of the country, where the crops have been very heavy. We quote carload lots to jobbers, mill shipments, Chicago delivery, as follows: Wire nails, $1.90; painted barb wire, $2.05; galvanized barb wire, $2.35; smooth annealed wire, $1.75; smooth galvanized wire, $2.05; polished staples, $2.00; galvanized staples, $2.35.

Coke.—There is an excellent demand for coke, but owing to the car shortage at Eastern ovens, local receipts fall short of meeting the requirements. Connellsville furnace coke is quoted from $2 to $2.10 at the ovens, and standard 72-hour grades, $2.50 to $2.75 ovens. Wise County coke, $4.75 to $5.

Old Material.—The situation has not changed materially from the conditions of a week ago. Dealers are buying up all the material that is offered, and are willing to hold same in stock until their ideas as to prices are realized.

The local market is very firm, despite the light consumptive demand. Mill stocks are low, and at a not distant date, many will be forced to cover. We have changed several of our prices, and quote gross tons, as follows:

Old steel rails (4 feet and over)	$14.50 to 15.00
Old steel rails (less than 4 feet)	14.25 to 14.75
Old iron rails	19.25 to 19.75
Relaying rails, subject to inspection	23.00 to 24.00
Heavy melting steel	14.00 to 14.25
Mixed country steel	12.00 to 12.25

We quote as follows net tons:

No. 1 R. R. wrought	16.25 to 16.75
No. 2 R. R. wrought	15.25 to 15.75
Shafting	15.50 to 16.00
Dealers' forge, No. 1	12.50 to 13.00
Wrought pipe and flues	11.50 to 12.00
No. 1 cast, 150 lb. and less	13.50 to 14.00
No. 1 mill	9.00 to 9.50
No. 1 Busheling	11.50 to 12.00
No. 2 Busheling	11.00 to 11.50
Country sheet	8.00 to 8.50
No. 1 boilers, cut	11.00 to 11.50
Boiler punchings	13.50 to 14.00
Iron car axles	23.00 to 23.50
Steel car axles	17.00 to 17.50
Iron axle turnings	10.75 to 11.00
Cast borings	8.50 to 9.00
Mixed borings, etc	8.50 to 9.00
Machine shop turnings	10.50 to 11.00
Railroad malleable	13.75 to 14.25
Agricultural malleable	13.25 to 13.75
Stove plate and light cast scrap	11.25 to 11.75
Old iron splice bars	17.00 to 17.50

CLEVELAND.

Pig Iron is Firm and Prices are Tending Upward—Sheets Improve.

OFFICE OF *The Iron Trade Review*,
BROWNING BUILDING, September 20.

Heavy fogs of the past week have interfered to a considerable extent with vessel movements, but in spite of delays, receipts at lower lake docks have been large. Many of the smaller vessels, going up with coal, are compelled to wait from eight to ten days before they can get cargoes of ore for the down trip. The addition of so many large freighters to the lake fleets is making it increasingly difficult to the smaller vessels to do a profitable business and many vesselmen are wondering what will become of these small craft next year when the immense freighters, now under contract, go into commission.

The announcement that a steel company in the East has contracted for 25,000 tons of ore in England is not regarded by Lake Superior interests as having special significance. Although the contract was placed in London, the ore will doubtless be Spanish and will be used in making products for export, so that there will be a rebate of 99 percent in the duty. Ocean freights vary considerably from time to time, but when they are low it is not difficult to buy Spanish ores or ores from South Africa at such prices that they can be profitably used for export business.

Pig Iron.—Buying continues steadily, although there is little change in prices and increased firmness is noticeable. One interest has advanced its quotation on No. 2 foundry to $15.25 valley, but the usual price is not more than $15, while basic and Bessemer continue to sell at $15 valley furnace. Inquiries for the first half of next year are more numerous. As an indication of how the market is tending upward, it may be stated that at Toledo sales have been made within a few days, at from 65c to 95c in advance of prices obtained a week earlier. We quote as follows, Cleveland delivery:

Bessemer	$15.85 to 16.10
No. 1 Foundry	16.00 to 16.50
No. 2 Foundry	15.00 to 15.85
No. 3 Foundry	14.50 to 15.00
No. 2 Southern	15.25 to 15.85
Gray Forge	14.25 to 14.50
Gray Forge, Southern	14.00 to 14.25
Lake Superior charcoal	16.50 to 17.00

Finished Material.—While the demand for all products in which business has been good continues, perhaps the most noteworthy feature of the market this week is the improvement in sheets and pipe, both of which have been weak with prices irregular throughout the period of strong demand for other finished materials. There is increased demand for sheets and the disposition is manifested on the part of buyers to contract for next year, but the principal producer is not disposed to make such contracts at present prices. While there is no pronounced change in pipe, there is some improvement. Boiler tubes, which have been very quiet for some time, are in stronger demand. Bar iron is firm at $1.70 at the mills. It is expected that the demand for structural material, which is already very strong, will be increased next month, owing to the anxiety of builders to complete new construction before the cold weather sets in. It will be very difficult to meet this demand and it is probable that high premiums will be paid.

Old Material.—The market continues strong, with prices tending upward, especially on car wheels, boiler plate, heavy steel, railroad wrought and iron axles. We quote Cleveland delivery as follows:

Old iron rails	$22.50 to 23.50
Old steel rails (over 6 feet)	15.50 to 16.50
Old steel rails (under 6 feet)	16.50 to 17.50
Old car wheels	15.50 to 16.00
Steel boiler plate	13.00 to 14.00
Steel axles	18.00 to 19.00
Malleable iron (railroad)	15.00 to 16.00
Malleable iron (agricultural)	14.00 to 15.00
Heavy steel	16.00 to 16.50

We quote as follows, net tons:

No. 1 R. R. wrought	16.00 to 16.50
No. 1 busheling	13.50 to 14.50
No. 1 machine cast	13.25 to 13.75
Iron axles	21.50 to 22.50
Axle turnings	11.50 to 12.50
Wrought turnings (free from cast)	10.50 to 11.50
Grate bars	8.50 to 9.50
Pipes and flues	12.50 to 13.50
Tank iron	10.00 to 10.50
Hoop and band iron	8.00 to 9.00
Sheet iron	7.00 to 8.00
Wrought drillings	10.50 to 11.50
Stove plate	10.00 to 10.50
Cast borings	8.50 to 9.50

CINCINNATI.

Increasing Firmness of Southern Iron—Conditions Generally Favorable.

September 20.

Pig Iron.—The past week has been fairly active in point of inquiry and business placed. Most of the pending business noted in our letter of last week has been closed, and while no important new large inquiries have been submitted this week, there has been a well distributed demand for smaller tonnages from 200 up to 500 tons. It is becoming increasingly apparent that buyers are in a mood to place orders for delivery over the first quarter and first half of 1906. A number of such inquiries are on the market, most of them for lots ranging from 300 to 600 tons, and one local consumer submits specifications for 1,200 tons. All sale agencies report the market in a healthy condition and inquiries are regarded to be strictly bona fide with an intent to purchase and not merely to test the market. Some Southern furnaces have quoted $12 Birmingham for deliveries over the first half of next year, but others are declining to make any quotations.

Several fairly good sized orders for gray forge have been placed, and the recent dullness in this grade seems to be disappearing and the market steadying, although there is still considerable of this iron and other low grades available. Prices for gray forge during the week have been about $10.25 Birmingham, but one transaction of 500 tons consummated today was on the basis of $10.50 Birmingham. One sale for delivery over the first quarter of 1906 was also made at $10.50 Birmingham.

The general market for Southern iron appears to be tending toward a full $12 basis for No. 2 foundry. Quotations of $11.50 and $11.75 are still heard of occasionally, but these figures are becoming rapidly scarcer, and South-

ern furnace interests are showing less anxiety to take orders at anything under the $12 basis.

Southern Ohio furnaces appear to be governed in the making of prices entirely by their individual situation and the condition of their order books and stocks on hand. When one of these furnaces has an abundance of any particular grade, it has been evidently the policy of such furnaces to make a price which would dispose of the iron. As an instance a sale of No. 1 Foundry at $14.50 Southern Ohio furnace has been reported, which is on the basis of $14 for No. 2 and a quotation of $13.50 f. o. b. furnace for No. 3 foundry, has been quite general throughout the territory. Strictly No. 2 iron is firmly held, however, at $14.25 to $14.50 at furnace, and it is believed that, as soon as these odd lots of various grades are disposed of, prices will strengthen all along the line. While we do not revise quotations this week for Southern iron, it is quite apparent that but little iron is now obtainable at $11.50 Birmingham, and reports of sales at $12 Birmingham are more numerous now than previously. We quote f. o. b. Cincinnati as follows:

Southern Foundry No. 1	$14.75 to 15.25
Southern Foundry No. 2	14.25 to 14.75
Southern Foundry No. 3	13.75 to 14.25
Southern Foundry No. 4	13.50 to 14.00
Southern Foundry No. 1, soft	14.75 to 15.25
Southern Foundry No. 2, soft	14.25 to 14.75
Gray Forge	13.00 to 13.75
Northern Foundry No. 1	15.90 to 16.15
Northern Foundry No. 2	15.40 to 15.65
Northern Foundry No. 3	14.90 to 15.15
Jackson County Silvery, 8 percent	18.15
Southern Charcoal	18.25 to 18.75

Coke.—Demand is more active and the market is firm with ovens demanding strong prices. Connellsville operations are firm in their views for foundry coke for next year's delivery and some of the ovens refuse to quote. Others demand $3.00 per ton f. o. b. ovens, but some coke is available at $2.75 on contracts commencing at once and running into next year. While there is no quotable change in prices as compared with a week ago, all advices indicate an upward trend of values. Prices in the various coke producing districts are as follows f. o. b. ovens:

†Wise County, Va. Furnace Coke prompt shipment	$2.15 to $2.25 per ton
Wise County, Va. Foundry Coke on contracts	2.40 to 2.50 per ton
Pocahontas Furnace Coke on contracts	2.00 to 2.10 per ton
Pocahontas Foundry Coke on contracts	2.25 to 2.50 per ton
*Connellsville Furnace Coke on contracts	2.00 to 2.10 per ton
*Connellsville Foundry Coke on contracts	2.50 to 2.75 per ton
Kanawha Furnace Coke on contracts	2.00 per ton
Kanawha Foundry Coke on contracts	2.35 to 2.50 per ton

†Wise County, Va., Coke on Furnace contracts is sold mainly on a sliding scale basis for pig iron prices.
*Connellsville Coke inside prices apply to "main line" ovens and not to strictly Connellsville Coke.

Old Material.—The Market continues firm, but there has been no quotable advance in prices. Dealers are strong in their views and are holding their stocks in expectation of a further advance in values. We quote:

Old No. 1 railroad wrought, net tons	$14.00 to 15.00
Cast machine and foundry, net tons	12.00 to 13.00
Old iron rails, gross tons	20.00 to 21.00
Old steel rails, gross tons	15.00 to 16.00
Old short lengths, gross tons	14.00 to 15.00
Old iron axles, net tons	20.00 to 21.00
Stove plate, net tons	9.50 to 10.00
Wrought turnings, net tons	9.00 to 10.00
Cast borings, net tons	7.50 to 8.00
Car wheels, net tons	14.00 to 14.50

Finished Material.—The market continues active with a good demand for nearly all descriptions. Plates and sheets are finding an increased demand. Bar iron remains firm with a good inquiry. Bar iron is quoted at 1.65c to 1.70c; steel cars at 1.63c, half extras, with dealers quoting 1.85c for iron and steel out of store. Galvanized sheets, No. 10 and No. 12, in car lots are 2.48c. We quote black sheets, No. 27 at 2.30c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 2.70c; No. 27, 2.60c; No. 16, 2.20c; No. 14, 2.10c; No. 12, 2.05c; No. 10, 2c. Tank plates are firm and sell out of store at 2c for ¼-in. and 2.10c for 3-16, No. 8 and 10. Beams and channels are quoted at 2.25c to 2.50c from stock and angles at 2c to 2.05c for base sizes.

In merchant pipe it is understood that some of the independent mills are getting well filled up and that the recent irregularity in prices is showing a steadier tendency. We quote f. o. b. Cincinnati:

MERCHANT PIPE.

(Basing Discounts.)

	Steel Pipe. Black.	Steel Pipe. Galv.	Guaranteed Wrought Iron Pipe. Black.	Guaranteed Wrought Iron Pipe. Galv.
	Percent.	Percent.	Percent.	Percent.
⅛ and ¼ inches	65.35	49.35	63.35	47.35
⅜ and ½ inches	69.35	57.25	67.35	55.35
¾ to 6 inches	73.35	63.35	71.85	61.85
7 to 12 inches	68.35	53.35	66.85	51.35

PHILADELPHIA.

Orders are Numerous and Prices are Tending Upward.

September 20.

The long expected boom may now be said to be fully under way, and interest begins to converge largely upon the effect it will have upon the prices of pig iron. Judging from past experience, an advance of $1 or $2 a ton before the close of the year might naturally be looked for, but the blast furnaces of the country have shown such an astonishing productive capacity, increasing their output easily to meet the heaviest demands upon them, that prediction of such an advance would be rash. Many furnaces now have orders to their full capacity for the rest of the year, and are giving quotations for the first and second quarters of 1906. These generally are at a slight advance over prices now ruling. As bearing upon future prices it is always well to remember the possibility of imports. Announcement has been made of orders placed in England for 25,000 tons of hematite ore for a large Pennsylvania rail-making company and for a cargo of Cleveland iron for a Philadelphia firm of pipe founders. Both the rails and pipes made from these importations are to be exported, of course. A very marked advance in prices would mean large imports for the domestic market, which are impossible at the prices now ruling.

Pig Iron.—Orders continue numerous, with an advancing tendency in prices. A large company in eastern Pennsylvania is said to have bought 25,000 tons of basic at $15.50, and heavy purchases of low phosphorus are also reported. It is needless to say that with so much business in sight producers are making no concessions, but are inclined to advance figures within reasonable limits. The big orders for rails, cars and other materials given by the railroads are responsible for a great rush of orders from other consumers, and the next six weeks are expected to develop an even more active trade. Prices as yet show no radical changes, and may be quoted as follows:

No. 1X Foundry	$17.25 to 17.50
No. 2X Foundry	16.75 to 17.00
No. 2 Plain	16.00 to 16.25
Standard Gray Forge	14.75 to 15.25
Ordinary Gray Forge	14.25 to 14.50
Basic	15.50 to 16.00
Low Phosphorus	20.50 to 21.00
Southern No. 2X, rail	15.75 to 16.00
Southern No. 2X, dock	15.25 to 15.50

Finished Material.—The pressure on the mills grows steadily greater, and their activity is expected to become even more intense, if possible, in the near future. There is a stronger demand for bar iron and for hoops, and the prices of these are expected to be raised in a short time. While premiums continue to be asked for anything like prompt delivery schedule prices remain unchanged as follows: Beams, channels and angles, according to specifications, 1.83½c to 1.95c; refined iron bars, 1.63½c to 1.80c; steel bars, 1.63½c to 1.70c; plates, 1.73½c to 1.80c.

Old Material.—Dealers charge that there seems to be something like an understanding among mill men not to buy at present prices, which they claim are too high. In most lines a difference of about 50 cents a ton separates sellers and buyers. In view of the great and growing activity of the steel trade dealers believe that the mill people will be forced to accept their figures. In the meantime prices may be quoted as follows:

Old steel rails	$16.50 to 17.00
No. 1 steel scrap	15.75 to 16.25
Old steel axles	19.00 to 20.00
Old iron axles	25.00 to 26.00
Old iron rails	20.50 to 21.50
Old car wheels	15.50 to 16.50
Choice scrap, R. R. No. 1 wrought	20.50 to 21.00
No. 1 yard scrap	18.50 to 19.00
Machinery scrap	15.00 to 15.50
Low phosphorus scrap	20.50 to 21.00
Wrought iron pipe	15.50 to 16.00
No. 1 forge fire scrap	14.50 to 15.00
No. 2 forge fire scrap, ordinary	12.50 to 13.00
Wrought turnings	13.50 to 14.00
Axle turnings, heavy	14.50 to 15.00
Cast borings	9.50 to 10.00
Stove plates	12.50 to 13.00

NEW YORK.

Steady Buying Movement in Pig Iron—Rail Orders Over 100,000 Tons.

OFFICE OF *The Iron Trade Review*,
ROOM 1315, No. 150 NASSAU ST., September 20.

Pig Iron.—A steady, wholesome buying movement has developed in the local pig iron market. While prices have not advanced materially, still all grades are very strong at the old quotations. Evidently consumers are convinced that no lower prices need be expected in the near future, for inquiries for shipment during the first months of next year are common. Inquiries have been heavy, especially during the last few days, but actual transactions have been only moderate in volume. Reported sales of Bessemer in the interior have been followd with interest, but steel iron has not been a feature in the local market. The transactions of the week make up a total of about 40,000 tons, of which at least three-fourths was foundry iron of various grades, and the remainder mostly gray forge with inconsiderable tonnages of special material. Foundry orders were pretty well distributed among the producers of the country, Southern furnaces sharing in fair proportion with Northern producers. Most of the sales were in small lots ranging from 100 to 1,000 tons, but single transactions involving 2,000 tons and over have not been uncommon. Among the buyers were the International Pump Co., and among the inquiries is one from the General Electric Co. for 2,280 tons of 2.50 to 3 per cent silicon iron for delivery at Schenectady. There are several inquiries for lots for delivery during 1906. The following are prices at tidewater:

Northern No. 1 Foundry	$16.75 to 17.00
No. 2 Foundry	16.00 to 16.25
No. 2 Plain	15.50 to 15.75
No. 1 Southern Foundry	16.25
No. 2 Southern Foundry	15.50 to 16.00
No. 3 Southern Foundry	15.25 to 16.75
No. 4 Foundry	14.50 to 14.75

Pig Iron Certificates.—Trading in pig iron certificates on the New York Produce Exchange has been moderately active. Prices have experienced only slight fluctuations. A sale of 500 tons of the regular classification for November delivery at $15.50 was reported Monday. Foundry iron warrants follow:

	Bid.	Asked.
October	15.30	15.75
November	15.30	15.85
December	15.40	15.95
February	15.50	16.00
March	15.50	16.00

Finished Iron and Steel.—Transactions in steel have not been as heavy as those of last week, but they have still been far in excess of the ability of the mills to produce during a corresponding period. The tonnage of rails booked has been less for the past two weeks, which was to have been expected. Most of the large requirements have been provided for, but the aggregate of smaller orders has been considerable. Among the bookings reported are the following: Philadelphia & Reading, 17,000; Tidewater Railway, 11,000; Chicago, Indianapolis & Louisville, 5,000; Chesapeake & Ohio, 5,000; Apalachicola & Northern, 7,520; Norfolk & Western, 10,000; Wheeling & Lake Erie, 5,000; Central New Jersey, 5,000; Oregon & Western, 10,000, and others, making a total of more than 100,000. A large tonnage is pending.

New business in structural shapes has not been large in volume, although an early revival is expected. Indeed no one seems anxious for a greater demand for the moment, the orders still remaining unfilled being enormous. Premiums for early delivery continue to be common, and one construction company, which makes a specialty of foreign work, is at present forced to depend upon foreign material entirely. Plates are in active demand, one order for 3,000 tons for delivery in 1906 being reported. The demand for iron bars has been fair. The following are prices at tidewater: Angles, 3 to 6 in. x ¼ in. and heavier, 1.84½c; beams, 3 to 15 in., 1.84½c; tees, 3 x ¼ in. and heavier, 1.89½c; plates, carloads, tank, 1.74½c; flange, 1.84½c; marine and ordinary firebox, 1.94½c; refined iron bars, 1.60c; soft steel bars, 1.64½c to 1.67c; sheets in carload lots, New York, No. 28, black, 2.40c.

Old Materials.—The market for scrap iron and steel has been fairly active and prices are firmly held. Inquiry for heavy melting steel scrap is apparently only for immediate needs. Wrought scrap has been in demand and sales amounting to about 500 tons are reported. The following prices are f. o. b. approximately, at tidewater:

Old iron rails	$20.00 to 21.00
Old steel rails, long lengths	14.50 to 15.00
Old steel rails, short pieces	14.00 to 14.50
Relaying rails	22.50 to 23.00
Old car wheels	15.00 to 16.00
Old iron car axles	21.00 to 22.00
Old steel car axles	18.50 to 19.00
Heavy melting steel scrap	13.50 to 14.00
No. 1 railroad wrought scrap	17.00 to 18.00
Iron track scrap	15.00 to 16.00
Wrought pipe	12.00 to 13.00
Cast borings	8.50 to 9.00
Wrought turnings	12.25 to 12.75

The Metal Market.

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1315, No. 150 NASSAU ST., September 20.

Pig Tin.—Tin has suffered another decline, owing to further arrivals here and reaction abroad. Although the shipments from the straits were not as heavy as was anticipated, it is believed that extensive cargoes will soon be shipped. Today's closings follow: Spot and September, 31.60c to 31.90c; October, 31.50c to 31.85c; November, 31⅜c to 31¾c; London, £145 5s and £144 10s. Arrivals, 1,725 tons to date, with 3,580 tons afloat.

Copper.—Few purchases of refined copper and importations of Chile bars resulted in a weak market. Today's closings: Lake and electrolytic, 16c to 16¼c; casting, 15¾c to 16c. London's closing today: £68 12s 6d and £68 10s. Exports for the month, 8,731 tons.

Lead.—The demand for all grades of lead has been fair. Today's closings follow: 4.85c to 4.95c; St. Louis, 4.75c; London, £13 16s 3d.

Spelter.—The local market is stronger and prices rule firm. Closing quotations today were: Spot, 5.25c to 5.95c; St. Louis, 5.75c; London, £26 7s 6d.

Antimony.—The market is unsettled and weak. The

following are current quotations: Cookson's, 14c asked; Hallet's, 13.5c; other grades, 12c to 13c.

CHICAGO.

OFFICE OF *The Iron Trade Review*.
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Copper and antimony are both fractionally lower, the former ¼ of a cent and the latter 1c, but with these exceptions there are no other changes in prices. All metals are in fair demand, appearances indicating a steady market for the balance of the year. We quote lake copper 16½c for carload lots, Chicago, and 16¾c for less than carload lots. Casting copper, 16⅜c for carload lots, and 16⅝c for less than carload lots. Spelter continues firm at 5.85c for carload lots and 6⅛c for lesser quantities. Sheet zinc, 7¼c for carload lots of 600-lb. casks, and 7½c for less than carload lots. Pig lead, 4.85c 50-ton lots, 4.90c for carload lots and 5c to 5⅛c for less than carload lots. Antimony is quoted at 16c for Hallet's and 17c for Cookson's.

Buying of old metals is free and prices firm. Dealers' quotations are approximately as follows:

Copper wire, 14c; heavy copper, 13¾c; copper bottoms, 12½c; copper clips, 13½c; red brass, 13c; red brass borings, 11c; yellow brass, 9¼c; yellow brass borings, 8¾c. Pipe lead, 4c; tea lead, 3.75c; zinc, 4c.

TRAFFIC MANAGERS

Of Steel Corporation Companies are Tendered a Banquet at Chicago.

The presence of the traffic managers of the constituent companies of the United States Steel Corporation in Chicago last week was the occasion of a banquet given them by local officials of the corporation at the Wellington hotel, Monday evening, Sept. 11. Traffic officials of several railroads and independent steel companies were invited. During their stay in Chicago, the party visited the plant of the Illinois Steel Co., at South Chicago, and were also entertained by automobile rides around the city. The following gentlemen were at the banquet:

J. S. Keefe, first vice president American Steel & Wire Co., Chicago.
J. E. Gorman, F. T. M., Santa Fe System, Chicago.
A. G. Young, T. M., American Sheet & Tin Plate Co., Pittsburg.
L. C. Bibler, T. M., Carnegie Steel Co., Pittsburg.
A. F. Mack, T. M., U. S. Steel Products Export Co., New York.
D. N. Bates, D. F. A., American Steel & Wire Co., Worcester, Mass.
J. A. Coakley, D. F. A., American Steel & Wire Co., Cleveland.
A. L. Ralston, T. M., Crucible Steel Company of America, Pittsburg.
C. S. Belsterling, T. M., American Bridge Co., Pittsburg.
W. O. Davis, D. F. A., American Steel & Wire Co., Pittsburg.
H. R. Moore, T. M., Republic Iron & Steel Co., Chicago.
F. A. Ogden, G. F. A., Jones & Laughlin, Ltd., Pittsburg.
F. T. Bentley, T. M., Illinois Steel Co., Chicago.
S. W. Manning, Gen'l New England Agent Santa Fe System, Boston.
F. E. Learned, T. M., E. J. & E. Ry., Chicago.
C. A. Tuttle, cashier American Steel & Wire Co., Chicago.
S. B. Duff, Secretary Traffic Managers Association, Pittsburg.
F. D. Day, F. C. A., American Steel & Wire Co., Chicago.
E. W. Green, D. F. A., American Steel & Wire Co., Chicago.

Two New Giant Freighters.—The Pittsburg Steamship Co. has just placed an order for two new freighters with the American Shipbuilding Co., and they will be built in the South Chicago yards and delivered next spring. Aside from the interest that arises from the fact that this order will bring the number of boats to be constructed by the American Shipbuilding Co. for 1906 delivery up to 19, these new freighters occupy a unique position as the first of the long talked of 600-ft. vessels.

Announcement is made that the Lackawanna Steel Co., Buffalo, N. Y., has secured an order for the shipment of 6,500 tons of steel rails for use by the Victorian Stret Railway authorities in Australia. Delivery of the rails will commence next January.

The furnace of the Penn Iron & Coal Co., Canal Dover, O., has been blown out for relining.

NEW STACK

Will be Built by Cleveland Furnace Co. for Malleable and Basic Iron.

When the building of blast furnaces was progressing at a rapid rate in 1902, an interesting feature was the erection of a number of stacks on the shores of Lake Erie; the sites being selected on account of the advantages in the low cost of assembling materials, where ore could be unloaded from vessel into furnace yard and because important consumers' interests were so near that often the expense of delivering iron did not exceed the switching charge of 25 cents per ton. The blast furnace of the Cleveland Furnace Co. has now been in operation a little more than two years. The members of the firm of Rogers, Brown & Co., who originated the project, decided in 1902 to form a company to build a furnace on a Lake Erie site, and after a careful canvass of the advantages of several points, Cleveland was selected. This firm had long been selling large quantities of pig iron in the Cleveland market, and on account of the constantly increasing demand in that district, decided to enter into the field of manufacturers. A site of about 175 acres, with one and one-half miles of Cuyahoga river frontage, was purchased in the vicinity of Clark avenue. The city authorities, recognizing the importance of the enterprise, and the possibilities in the way of development of the upper river valley, assured the projectors that the river would be made navigable through this property at the earliest date possible. In the fulfillment of this promise, much work has already been done, and the dredging will be finished in a few months.

Owing to the success of the project and to the fact that the cost of handling will be much reduced by the improvements of the river, the company has decided to erect a second stack, about the size of the present furnace, which is 85 x 20 ft. Details as to the construction or the time of erection have not been fully decided upon. It is expected that the new furnace will be used for the making of malleable and chilled basic iron. W. B. Meacham, of Rogers, Brown & Co., is president of the Cleveland Furnace Co.; S. W. Croxton, vice president; C. Birdsall Smith, secretary and treasurer; D. T. Croxton, general manager. The sales and manager offices are in the Rockefeller building, Cleveland, and the general office at the works on Clark avenue.

The Beaver Metallurgical Co.

The Beaver Metallurgical Co. has just completed the installation of a large metallurgical and chemical plant at Beaver Falls, Pa., amply provided with the necessary furnaces and machinery for the manufacture of a long line of chemical and metallurgical products on a large scale, especially those of the rare metals. For the present the company will devote itself only to the production of metallic tungsten, ferro-tungsten, and all other tungsten alloys and compounds in any quantity and in any degree of purity, with a view of later enlarging the scope of its activity as the conditions may warrant. Its favorable location, its close association with some of the largest tungsten ore producers, and its large and entirely modern equipment will place it in a position to meet any urgent demands upon its capacity, as well as to meet any competition. The company solicits correspondence with all manufacturers in the iron and steel branch, the main property of whose products consists in special hardness and resistance to abrasion, properties which can in no better way be secured than by the addition of tungsten to the raw material, no matter whether it be crucible steel, open-hearth steel, cast iron or any other form of iron or steel used in the industries.

The Rockhill Furnace Co., Pennsylvania, had its furnace banked from Aug. 12 to 23, repairing furnace top.

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OUR TRADE WITH THE FAR EAST.

An effort will be made here to present, in the briefest possible form, a general statement of our present trade with Russia, Japan and China, and of the present state and prospects of the iron industries of those countries, with a view of suggesting the possibilities of future trade with them in iron and steel.

The value of all classes of exports of the United States in the fiscal year ended June 30, 1904, has been as follows:

To Russia	$ 18,976,062
To Japan	24,675,289
To Chinese Empire	12,752,143
To all countries	1,435,179,017

In the same year, the exports of all iron and steel products of which the weight is ascertained, have been as follows, in gross tons:

	To Russia.	To Japan.	To China.
Steel rails	..	15,035	8,151
Structural iron and steel	..	2,109	1,422
Steel bars	2	3,214	1
Iron bars	..	....	77
Steel sheets and plates	..	730	19
Iron sheets and plates	..	37	6
Wire	14	2,633	567
Wire nails	122	7,980	2,445
Cut nails	..	489	573
All other, including tacks	10	144	3
Tin plates	..	69	....
Totals	148	32,440	13,264

In this same period the total exports of all iron and steel products which are returned by weight amounted to 675,000 tons, which figure included 228,000 tons of pig iron, scrap and billets, etc., of which commodities it is perhaps not unnatural that there should not be exports to the countries named above.

So far as China and Japan are concerned, the iron and steel exports do not stand in bad relation with the total exports from the United States. In the case of Russia it is different, our iron and steel exports being quite negligible, while we have a general export trade with Russia which stands just midway between our trade with China and Japan.

The reason is obvious, being that Russia has a large iron industry of its own, while Japan and China together produce hardly 100,000 tons of pig iron annually. The production of Russia in the calendar year 1904 has been as follows:

Russian production, 1904:	Metric tons.
Coal and lignite	19,318,370
Iron ore	5,272,300
Pig iron	2,078,325
Steel ingots and castings	2,811,948
Steel rails	401,541

Japanese statistics are far from complete. In 1901 Japan produced 70,172 metric tons of iron ore, and in 1903, 10,088,845 metric tons of coal. Its pig iron production has been as follows:

1901	55,171
1902	32,186
1903	33,870

For China there are no statistics available at all, but it is generally estimated that the country produces about 65,000 tons of pig iron annually.

So far as mineral resources are concerned the countries being discussed are not disadvantageously situated. Russia is well supplied with coal and with iron ore; indeed, the United States depends largely upon Russia for manganese ores. China has abundant coal and iron ore. Japan has good supplies of coal, its production in 1903 having been 1.15 percent of the world's total. As to iron ore it is not well supplied naturally, but the Japanese government works, which were designed on quite an ambitious scale, are located near Wakamatsu, near the best coal field of Japan, and on a harbor convenient for importing iron ore from China. The Japanese have been more successful than the Chinese in working up Chinese iron ores.

Even having regard to the stupendous growth of the iron and steel industry in the United States, it can be stated as a general principle that the building up of an iron industry is a slow and laborious process. It follows, and follows laggardly, a demand for iron and steel products. This was certainly the case with the United States, where the aid of a high protective tariff had to be invoked. All indications are that in Russia, Japan and China the demand for iron and steel products of all classes is destined to increase wonderfully in the next few years. Whatever may

be the status of iron production in these countries a decade or a quarter century hence, there is certain to be, meanwhile, the necessity for heavy imports from other countries. Where railroads are to be built and machinery employed in industrial operations, trade has no time to wait on the development of the industry for the production of the materials; they must be had at once.

The experience of the United States in railroad building well bears out this contention. Thus, in 1880 and 1881 we had a fairly pretentious iron industry. In those two years combined we made 2,951,730 tons of iron and steel rails, about the same tonnage as in either of the single years 1902 or 1903. In the same two years, however, we built 16,953 miles new railroad, and we had to eke out our own production by imports of 604,472 tons.

Assistance will be given to our commerce with Russia by the removal of the maximum duties imposed by Russia since March 9, 1901, on certain iron and steel products and machinery, which grew out of the imposition by the United States of differential duties on Russian sugar. The removal of the maximum duties this month resulted from the presence here of the Russian peace envoys, and the Czar's gratitude toward President Roosevelt. The new general customs tariff of Russia of Jan. 13-26, 1903, is now scheduled to go into effect March 1, 1906. It materially increases the duties on nearly all iron and steel products, the increases of course applying only to such countries as have not commercial conventions.

A WISE EXPENDITURE PROPOSED.

The proposed canalization of the Ohio river from Pittsburg to the Mississippi is a subject of the utmost importance to the entire country. Pittsburg is the tonnage wonder of the world. In a producing capacity she is unequaled throughout the globe. Her supremacy in this respect is so clearly established that there is no city which can properly be called second to her. The tonnage of New York, London, Liverpool, Hamburg and Antwerp combined do not equal the tonnage of this one town of Pittsburg. In 1902 Pittsburg rail and river shipments aggregated 86,636,680 tons. This is nearly double the total movement of freight on the entire chain of great lakes. This enormous tonnage too has been obtained in the face of most unequal conditions. Shipping on the Monongahela and Allegheny rivers is restricted to that limited period of the year when navigable channels are provided by freshets. During this brief period, which is rarely longer than six weeks, an enormous commerce is moved. Transportation on the great lakes has been brought to a great refinement of economy but figures prove that the actual cost per ton mile from Pittsburg to New Orleans by the freshet system is .675 mill, as against .79 mill, the lowest ton-mile cost ever attained on the great lakes. It is estimated that on an improved 9-ft. channel from Pittsburg to tidewater the ton mile cost could be reduced to .39 mills. Pittsburg is at the head of a river system whose freight producing capacity is, as shown, the first in the world. The Ohio river borders six states with industrial communities scattered over its entire length. Along it and its tributaries are iron fields, foundries, machine shops, bridge works, glass factories, potteries, brick and tile works, cement works and a variety of other industries producing both low and high class tonnage in great abundance. If these industries already exist under the handicap of an inadequate river transportation system, what is to be said of their growth were they to be provided with a permanent and unfailing waterway navigable the whole year round.

The canalization of this great waterway would be a wonderful improvement and the Pittsburg steel makers and coal operators would by no means be the chief beneficiaries. Experience has shown that commerce multiplies greatly as the cost of transporting it lessens and here is a system lying dormant the greater part of the year whose possibilities in reducing freight costs are immeasurable. Any reduction in the actual cost of an article contributes a blessing to untold millions, for, unless an article is cheap, its use cannot be enjoyed by the many. Few have riches. Money wisely and generously expended in improving the Ohio river and its tributaries would greatly extend the scope of American markets because it would afford direct communication by water to the ports of the Pacific and eventually open the markets of the Orient by way of the Isthmian canal to the Ohio and Mississippi valleys. It would increase Pittsburg's position as a steel-making center because its products could be delivered on the Pacific coast at a lower cost of transportation than could be offered by the railways to the steel works at present located west of the Mississippi. This is important because beyond the Pacific lies the Orient and the steel-making countries of Europe have the advantage of distance now in supplying those countries with steel products.

At the instigation of the Ohio Valley Improvement Association the National Rivers and Harbors Congress has taken the necessary steps to call a National Waterways Conference to be held in Washington in January next. At that time the question of connecting Pittsburg with tidewater will be given consideration.

Water Tube Boiler Consolidation.

By a deal closed Sept. 15 the water tube boiler department of the Aultman & Taylor Machinery Co., Mansfield, O., is to be consolidated with the Stirling Co., Barberton, O., and a new company, known as the Stirling-Cahall Boiler Co., will be incorporated with a capital of $4,500,000 for the manufacture of the Stirling, Niclausse, Cahall and other types of water tube boiler. Pending the organization of the new corporation, the Stirling company will operate the boiler department of the Mansfield plant, which has transferred all unfilled orders and contracts. The agricultural machinery department of the Aultman & Taylor company, however, was not included in the deal, and will be operated as in the past. Reports are that approximately $1,000,000 was paid for the Mansfield plant.

PERSONAL.

Lyman A. Holmes succeeds M. Sims as superintendent of the National Steel Foundry Co., New Haven, Conn.

R. J. Gross, vice president of the American Locomotive Co., is in Europe.

Thomas Devlin, of Thomas Devlin & Co., Philadelphia, has returned from a trip to Europe.

A. H. Valiquette, for some time with the Rand Drill Co., Pittsburg, has gone to New York, where he will act as eastern representative of the Blaisdell Machinery Co.

John McConnell has left the Jones & Laughlin Steel Co., Pittsburg, to become general manager of the open hearth plant of the United Steel Co. at Canton, O.

James Spiers, secretary and general manager of the Fulton Iron Works, San Francisco, Cal., was recently in Cleveland and reported building in the West as extremely active.

Cameron Camp, for fourteen years identified with the William Tod Co., Youngstown, O., leaves the concern Oct. 1, though retaining a financial interest in the company.

Robert Bently has been chosen president of the Ohio Iron & Steel Co., Youngstown, O., to succeed the late Thos. H. Wells.

George I. Seltzer, general foreman of the factory department of the American Iron & Steel Mfg. Co., Lebanon, Pa., succeeds Morris High as assistant superintendent over all the departments except rolling mills.

John A. Mathews, assistant manager of the Sanderson Works of the Crucible Steel Co. of America, at Syracuse, is in England to attend the Sheffield meeting of the Iron and Steel Institute.

Gilbert L. Robinson has accepted the position of salesman with C. C. Knight & Co., of Philadelphia, leaving the Carnegie Steel Co., by which he has been employed for several years.

W. S. Doran has been appointed manager of the car department of the Allis-Chalmers Co., at Milwaukee. He was formerly associated with the British Westinghouse Electric & Mfg. Co., Ltd.

R. A. Lewis, formerly assistant chief engineer at the Donara Works of the Carnegie Steel Co. and later connected with the Mesta Machine Co., West Homestead, has accepted the position of chief engineer with the United Steel Co. at Canton.

John McConnell has accepted a position as superintendent of the steel furnaces of the United Steel Co., of Canton, leaving the Jones & Laughlin Co., where he was superintendent of the Talbot steel furnace department. He will be succeeded by Roger Dowling.

J. F. Whitmer, of Buffalo, N. Y., has taken charge of special work for J. G. White & Co., New York, bearing on hydraulic engineering in foreign fields. During the last ten years, Mr. Whitmer has designed and superintended the construction of water works systems at upwards of 30 different towns and cities in the United States.

Guy R. Johnson, formerly general furnace superintendent of the Illinois Steel Co., South Chicago, Ill., has purchased an interest in the Red River Furnace Co., Clarksville, Tenn., and assumed the position of managing director. The furnace hereafter will make a specialty of high silicon irons, ferro-phosphorus and other special irons.

James C. Hain has become associated with J. G. White & Co., New York, as superintendent of masonry, having resigned his position with the Chicago, Milwaukee & St. Paul railroad, by which he had been employed for the past 10 years in its bridge building department. He was in charge of the construction in 1901 of the large ore dock and approaches at Escanaba, Mich. He is a graduate of the University of Wisconsin.

Charles M. Schwab returned Tuesday on the Kron Prinz Wilhelm from Europe. His first act on land was to deny a number of stories of big deals which had been printed by newspapers.

NATIONAL CAR WHEEL CO.

Has Passed into the Control of James D. Rhodes and Wm. F. Bonnell.

The control and management of the National Car Wheel Co. have passed into the hands of James D. Rhodes, of Pittsburg, Pa., and William F. Bonnell, of Cleveland. This company owns and operates four plants, one at Pittsburg, one at Cleveland, one at Sayre, Pa., and one at Rochester, N. Y. Its product is cast iron chilled car wheels, steel-tired wheels, gray iron castings, aluminum and brass castings. The works have an annual capacity of 300,000 wheels.

The officers are as follows: James D. Rhodes, president; C. A. Otis, Jr., and William F. Bonnell, vice presidents; George P. Rhodes, Treasurer; and C. A. Maher, secretary.

The directors number nine, and are as follows: James D. Rhodes, of Pittsburg; George P. Rhodes, of Pittsburg; C. V. Slocum, of Pittsburg; J. C. Holt, Grand Rapids, Mich.; C. A. Otis, Jr., of Cleveland; C. A. Maher, Cleveland; William F. Bonnell, Cleveand; W. T. Goodnow, of Sayre, Pa., and C. T. Chapin, of Rochester, N. Y.

Mr. C. T. Chapin, the former president of the National Car Wheel Co., remains with the company in a special capacity, with headquarters at Rochester, N. Y.

OBITUARY.

John Logan Boyd, formerly identified with James Boyd & Co. in the iron and steel business, Pittsburg, and later with the Pittsburg Novelty Works, died a few days ago at Philadelphia. He had been in poor health for ten years.

Edward W. Wolfe, for the past five years superintendent of the United States Tube & Iron Co., Pittsburg, died Aug. 30, aged 67. He had been connected with Morris, Tasker & Co., and later was superintendent of the tube department of the Reading Iron Co., Reading, Pa.

Robert W. Haseltine, state mine inspector of Ohio from 1888 to 1900, died suddenly Sept. 6 at a hotel in Yellowstone Park, where he had gone in the hope of recuperating his health. He was about 60 years old. After his retirement from official life, Mr. Haseltine followed the profession of mining engineer.

Samuel Borger, president of the Borger Bros. Co., boilermakers, Columbus, O., died Sept. 17 after an illness of several months. In addition to his prominence as a manufacturer Mr. Borger was a trustee of the Columbus Public Library, devoting considerable time to the supervision of the construction of the new Carnegie Library.

Vernon H. Rood, vice president and general manager of the Jeanesville Iron Works, Hazleton, Pa., died suddenly Sept. 2, at Bad Naudheim, Germany, where he had gone in search of health. Mr. Rood was born in Elyria, O., 48 years ago, and was graduated from the Stevens Institute of Technology. He was a prominent member of the American Society of Mechanical Engineers. He had devoted the last 15 years of his life to the perfection of mine pumps, bringing the Jeanesville Iron Works into prominence and winning for himself a world wide reputation as a pump designer.

ALFRED J. MAJOR

RETIRES FROM THE PRESIDENCY OF THE AMERICAN BRIDGE CO.

And is Succeeded by August Ziesing, the Western Manager—Promotion Regarded with Favor.

At a meeting of the board of directors of the American Bridge Co. (of New Jersey), to be held today, Sept. 21, the resignation of Mr. Alfred J. Major, president, will be presented, and Mr. August Ziesing, of Chicago, elected his successor.

While much regret has been felt at the retirement of Mr. Major, whose ability and personality are held in high regard everywhere, the selection of Mr. Ziesing as his successor meets with uniform commendation, owing to his wide popularity, sterling qualities and recognized attainments, his election providing ample assurance to the patrons of the American Bridge Co. of a continuance of that high standard of business honor and excellence of product that have been the constant aim of this great concern. Indeed, the general feeling prevails that the United States Steel Corporation is to be congratulated that this important constituent company has been able to thus transfer its affairs to such admirable hands.

ALFRED J. MAJOR.

AUG. ZIESING.

In the bridge company, the choice of Mr. Ziesing for the persidency is particularly gratifying to the other officials, owing to his previous connection as Western manager, and to the fact that he is known to be in accord with the general policies that have characterized Mr. Major's administration.

It is understood that Mr. Major has not made any other business connections, but intends to enjoy a respite from business cares for the present.

A review of the retiring president's career affords another example of what is popularly known as the self-made man. Mr. Major was born in Norristown, Pa., on April 10, 1861. After receiving a public school education he struck out in early life. Entering the employ of the Pencoyd Iron Works as a clerk in 1880, he rose from one position to another until finally made manager of the bridge and construction department, which position he still held at the time of the formation of the American Bridge Co. Shortly after, he accepted the position of Eastern division manager with the bridge company, and had charge of the operation of all its shops east of Pittsburg, which represented about one-half of the entire output of the concern.

When, in 1901, President Roberts resigned from the bridge company, Mr. Major was elected his successor, and has since held that office. Some idea of the stupendous task which confronted the new executive may be had, when it is considered that the company was still in its infancy and many problems remained unsolved as to the best form of organization, system of operation, etc. Being the first consolidation of its kind, and there being no precedent or experience to guide in the work of arranging the units of this big enterprise into a symmetrical whole, a situation existed which called for the most arduous labor and adroit skill. Each of the thirty odd plants composing the company had its own system of operation, method of doing business and standard of workmanship (which, by the way, in many cases fell below the high mark set by the new administration), and the amount of work necessary to adapt these diversified conditions to a common basis, so far as local conditions would permit, was by no means inconsiderable. As some of the older plants which the company had acquired proved unprofitable in operation, as compared with results that could be obtained by concentration, plans were laid to consolidate such plants, as exemplified by the new plant at Ambridge, Pa., which replaces several antiquated plants formerly located in and around Pittsburg. Other

consolidations of the same nature planned for the East and West have not yet been effected.

Mr. Major's previous record, together with his success in the American Bridge Co., have earned him the reputation of being one of the foremost operating men in the country.

While Mr. Ziesing's reputation as an operator is not so well known as that of his predecessor's, his large and varied experience in the bridge and structural business, including, as it does, the technical, manufacturing and commercial phases of this industry, presages a successful career for him in the role of president.

Mr. Ziesing is 47 years of age, having been born in 1858 in Peru, Ill. He received his education in both public and private schools, graduating from the State University of Illinois as a civil engineer in 1878. His first occupation was that of a draftsman. After serving in this capacity for two years with marked success, he was made assistant engineer, in charge of bridges, and also given charge of some double tracking work in Ohio, by the Pennsylvania Railroad Co. From 1883 to 1895 he was connected with the Lassig Bridge & Iron Works in Chicago, first as engineer and later as engineer and general manager. From 1895 to 1900 Mr. Ziesing practiced his profession as a consulting engineer in the city of Chicago, making railroad structures a specialty. At this time, the American Bridge Co. was formed and his services were quickly sought for the important poistion of Western manager, in which capacity he has valuably served the company ever since. In addition to being a member of the American Society Civil Engineers and the Western Society of Engineers, he is also identified with several clubs in Chicago.

MORE PROTECTION

Demanded by Canadian Stovemakers—Public Seems Indifferent.

TORONTO, CANADA, Sept. 18.—At the sittings of the Tariff Commission at Winnipeg, Man., on Sept. 7, a delegation of Western representatives of Eastern stove-makers strongly urged increased protection, stating that American manufacturers were crowding them out of the Western markets. J. H. Ashdown, of Winnipeg, a prominent merchant, took strong exception to the dumping clause. The body of the people, he said, were interested in lower rates of duty. The present tariff was beyond a revenue tariff and should be reduced. The public appeared remarkably indifferent to the inquiry and there were few who took the trouble to appear and present their views, so that the commissioners resolved to suspend investigations in Manitoba for the present and proceed West to British Columbia.

The question as to whether steel manufacturers are entitled to a bounty on steel rails, manufactured before the recent order-in-council explicitly withdrawing the bounty on rails, is not yet settled. John Fraser, the recently appointed auditor-general, is withholding the bounty of $61,000, earned by the Lake Superior Corporation on structural steel, until a court of competent jurisdiction shall have decided whether or not the company is entitled to a like sum paid it as a bounty on steel rails. He claims that it was wrongly paid and that the treasury should be recouped.

C. M. Kittson, Canadian commercial agent for South Africa, reports that that country offers a peculiarly suitable market for wire window screens and wire screen doors, neither of which articles has so far received the attention that the possibilities of the market deserve.

E. C. Atkins & Co., incorporated under the law of Indiana, to manufacture saws, machinery, etc., have been authorized to carry on business in Ontario on a capital of not more than $40,000.

NEW ENGLAND FOUNDRYMEN

Will Listen to Prominent Speakers During the Coming Season.

The New England Foundrymen's Association, after successful outings during the summer months, resumed their monthly meetings on Wednesday, Sept. 13, at the Exchange Club, Boston. Dinner was served at 6 o'clock, after which the routine business was disposed of in the usual manner, President John Magee presiding.

An application was received from the S. Obermayer Co., New York city, and on motion they were unanimously elected to membership.

Announcement was made that the association had accepted an invitation from the United Shoe Machinery Co. to inspect its plant at Beverly, Mass., on the afternoon of the next regular meeting, which will be held on Oct. 11, and the evening meeting would be held at the Exchange Club, Boston, where a prominent speaker will be present to make an address, same to be announced later.

Vice President Snow reported that the executive committee had secured some of the best and most prominent men connected with the foundry industry to address the association during the coming season, and earnestly requested that all the meetings be largely attended. The association now has a membership of over a hundred representative concerns of New England, and it is the desire of the officers to induce all foundrymen who are not affiliated to join with us. Our objects are the advancement of the interests of foundry operators, the promotion of mechanical and industrial interests, and the collection of proper information connected with the foundry business and the encouragement of harmony and uniform customs among its members.

On motion the chair appointed Messrs. Doherty, Caley and Miller a committee of three to canvas for an increased membership and attendance at the meetings.

The president then introduced as the speaker of the evening, Mr. E. H. Mumford, of Philadelphia, who gave an illustrated talk on the subject: "A New Multiple Molding Process." A slight discussion followed, at the conclusion of which, a unanimous vote of thanks was extended to Mr. Mumford for his very interesting remarks.

There being no further business, the meeting adjourned at 8:50 p. m. with the following in attendance:

E. H. Mumford, Philadelphia, Pa.
John Magee, Magee Furnace Co.
Edgar G. Seeman, The S. Obermayer Co.
Gustaf R. Sonerbruz, General Electric Co.
Walter B. Snow, B. F. Sturtevant Co.
J. R. Bates, Whiting Foundry Equipment Co.
Frank W. Marsh, American Tool & Machine Co.
Alex. McCarte Mason, American Tool & Machine Co.
M. H. Barker, American Tool & Machine Co.
Henry F. Arnold, American Tool & Machine Co.
W. M. Saunders, Saunders & Franklin, Chemists.
D. D. Russell, Jas. Russell Boiler Works.
C. C. Blaney, Boston.
Wm. Harvie, Corwin Mfg. Co.
Chas. E. Fouhy, Boston Labor Bureau.
S. M. Thompson, Barbour-Stockwell Co.
F. A. Hoyt, Barbour-Stockwell Co.
F. F. Stockwell, Barbour-Stockwell Co.
T. C. Wilson, Barbour-Stockwell Co.
H. E. Wetherbee, Jas. Hunter Machine Co.
Geo. H. Lincoln, G. H. Lincoln & Co.
Wm. J. Breen, Hugh W. Adams.
W. H. Coffin, Springfield Facing Co.
E. C. Peck, U. S. Graphite Co.
I. W. Winchester, Magee Furnace Co.
R. Hazeltine, Magee Furnace Co.
Theo. H. Colvin, Colvin Foundry Co.
A. H. Armington, Colvin Foundry Co.
E. J. Lyons, Brown & Sharpe Mfg. Co.
W. A. Jackson, Walworth Mfg. Co.
T. P. Kelly, T. P. Kelly & Co.
G. H. Carson, Mechanics Foundry Co.
L. E. Harper, Becker-Brainard Machine Co.
W. J. O'Brien, Becker-Brainard Machine Co.
C. J. Caley, Russell & Erwin Mfg. Co.
A. W. Gibby, Mechanics Foundry Co.
W. J. Kennedy, Mechanics Foundry Co.
G. S. Bullock, Whitehead Bros. Co.
Geo. B. Buckingham, Arcade Malleable Iron Works.

MONEY CONDITIONS RULE STOCK MARKET.

CONTINUED SCARCITY OF GOLD RENDERS TRADING LIGHT.

Railroad Stocks and a Few Industrials Show Activity During the Past Week.

The stringency of the money market during the past week precluded any heavy trading features and outside of some activity in a number of railway securities and a few random industrials the market was generally indifferent. Late in the week London cables of gold sales for shipment to New York, together with the bank statement more favorable than anticipated and widespread reports of remarkable activity in trade and industry, brought a reaction with noticeable advances. Speculators, however, were evidently puzzled by the money situation and dealings were small. Republic Iron & Steel, American Locomotive and United States Steel were among the active industrials of the week.

The following is a daily review showing the market features of the week:

Wednesday, Sept. 13. The good effect of the announcement of gold purchases abroad for shipment to New York was in a measure lost by the feeling that, nevertheless, money would be scarce with a considerable advance in rates until the completion of the crop movement. Trading was indifferent and several strong stocks of Tuesday became sharply reactionary, Sloss-Sheffield, Amalgamated Copper and Tennessee Coal & Iron recording sharp declines. United States Steel was dealt in considerably, closing at lower figures, and a number of railroad stocks also showed marked declines.

Thursday, Sept. 14. The failure of the Bank of England to increase its discount rate as anticipated, coupled with unexpectedly vigorous buying of Smelting, Reading and Missouri Pacific, stimulated the opening market and maintained a general higher tone throughout the day, stocks closing with a uniform advance. The day's transactions, however, were considered as strictly a Wall street move-

	Par	Capital Outstanding	Dividends Payable		Sept. 11	Sept. 18	Changes
			Basis	Paying			
Allis-Chalmers Co	100	19,820,000			16⅞	17⅛	+ ⅜
Allis-Chalmers preferred	100	16,150,000	7 cum		59	60	+1
American Can	100	41,233,300			11½	11⅝	+ ⅛
American Can preferred	100	41,233,300	7 cum	5 Quarterly	69½	69½	.....
American Car and Foundry	100	30,000,000			35⅝	36¾	+1⅛
American Car and Foundry preferred	100	30,000,000	7 n. c.	7 Quarterly	100¾	96	−4¾
American Locomotive	100	25,000,000			48⅞	54½	+5⅝
American Locomotive preferred	100	24,100,000	7 cum	7 Quarterly	112	115⅛	+3⅛
American Shipbuilding	100	7,000,000	4	4 Quarterly	53¾	58¾	+5
American Shipbuilding preferred	100	7,980,000	7 n. c.	7 Quarterly	105	105¼	+ ¼
American Steel Foundries	100	17,700,000			8½	9	+ ½
American Steel Foundries preferred	100	17,700,000	6 cum		39	38½	− ½
Barney & Smith	100	1,000,000			20	20	.....
Barney & Smith preferred	100	2,500,000	8 cum	8 Quarterly	128½	128½	.....
Bethlehem Steel	100	15,000,000			30	28⅛	−1⅞
Bethlehem Steel preferred	100	15,000,000	7 n. c.	7 Quarterly	88	87½	− ½
Bullock Electric preferred		1,000,000	6	6 Annually	114	113	−1
Cambria Steel	50	45,000,000	6	3 Semi-Annually	26¼	27¼	+1
Cambria Iron	50	8,468,000	4	4 Semi-Annually	49	48½	− ½
Colorado Fuel & Iron	100	30,132,000	7		42	44	+2
Colorado Fuel & Iron preferred	100	2,000,000	8 cum		.....	.....	.....
Wm. Cramp & Sons Ship & Eng. Bldg. Co.	100	6,098,000	5		.....	.....	.....
Crucible Steel	100	25,000,000			12⅛	12⅜	+ ⅛
Crucible Steel preferred	100	25,000,000	7 cum		64⅛	66½	+2⅜
Empire Steel	100	2,281,400			.....	5	−1
Empire Steel preferred	100	2,500,000	6 cum	3 Semi-Annually	.....	35	.....
Fay & Egan	100	1,000,000	5	5 Quarterly	60	60	.....
Fay & Egan preferred	100	1,000,000	7 cum	7 Quarterly	120	118	−2
General Electric	100	48,256,050	8	8 Quarterly	179	183	+4
International Pump	100	12,262,500		2	28	20	−6
International Pump preferred	100	8,850,000	6 cum	6 Quarterly	82	78	−4
Lake Superior Corporation	100	40,000,000			17	17	.....
Niles-Bement-Pond	100	5,000,000	6	6 Quarterly	126½	126½	.....
Niles-Bement-Pond preferred	100	2,000,000	6 cum	6 Quarterly	108	108	.....
Otis Elevator Co	100	6,350,300		2 Annually	60	60	.....
Otis Elevator Co. preferred	100	5,589,500	6 n. c.	6 Quarterly	106	107	+1
Pittsburg Coal Co	100	30,135,000			13½	13⅞	+ ⅜
Pittsburg Coal preferred	100	30,716,200	7		54	54⅛	+ ⅛
Pressed Steel Car	100	12,500,000		3	42½	45¾	+3¼
Pressed Steel Car preferred	100	12,500,000	7 n. c.	7 Quarterly	95¼	96	+ ¾
Pullman Palace Car	100	74,000,000	8	8 Quarterly	246	246	.....
Railway Steel Spring	100	13,500,000		2 Annually	35	37½	+2½
Railway Steel Spring preferred	100	13,500,000	7 cum	7 Quarterly	98½	98½	.....
Republic Iron & Steel	100	27,352,000			20⅜	23¼	+2⅞
Republic Iron & Steel preferred	100	20,852,000	7 cum	7 Quarterly	88⅜	94	+5⅝
Sloss-Sheffield	100	7,500,000	5	5	93¾	93	− ¾
Sloss Sheffield preferred	100	6,700,000	7 n. c.	7 Quarterly	.....	.....	.....
Tennessee Coal & Iron	100	22,552,800		4 Quarterly	84	87½	+3½
Tennessee Coal & Iron preferred	100	248,300	8 cum	8 Quarterly	.....	.....	.....
U. S. Cast Iron Pipe & Foundry	100	12,500,000			29½	30⅝	+ ⅛
U. S. Cast Iron Pipe & Foundry preferred	100	12,500,000	7 n. c.	7	.....	91⅛	.....
U. S. Steel	100	508,302,500			35⅜	37	+1⅝
U. S. Steel preferred	100	360,281,100	7 cum	7 Quarterly	102⅜	104⅛	+1⅞
U. S. Steel 5's	100	463,798,000	5	5 Annually	97	97⅜	+ ⅜
Virginia Iron, Coal & Coke	100	8,641,600			40	43	+3
Westinghouse Electric	50	20,986,350	10	10 Quarterly	166	166	.....
Westinghouse Air Brake	50	10,990,450	20	20 Quarterly	148½	153	+4½

Friday, Sept. 15. The money situation was the all important feature of the day's trading, even overshadowing the prospect of a battle for control of the Wabash, the securities of which recorded a considerable gain with moderate selling. In anticipation of a poor bank statement, money on call registered 4 percent, the season's maximum. There was moderate trade in American Locomotive and Republic Iron & Steel with advances, and in United States Steel with a small decline. Railroad stocks

sold actively, but with fractional losses, while American Shipbuilding made substantial gains.

Saturday, Sept. 16. The publication of a bank statement much more favorable than anticipated infused considerable life into the inert opening market. Stocks made a general advance of about one point and buying was brisk, closing prices being near the highest of the day. Railway securities were heavily dealt in, Canadian Pacific fluctuating widely. American Locomotive and Republic Iron & Steel found several buyers.

Monday, Sept. 18. The market opened quietly, but the good effect of Saturday's bank statement, coupled with a decline in Sterling exchange and London cables announcing the purchase of a million more gold for shipment to New York, resulted in vigorous dealing, stocks generally recording an advance. Railroads were strong, foreign purchases making the Canadian Pacific a leader. Industrials active on the market were the American Car & Foundry, American Locomotive, Colorado Fuel & Iron, Republic Iron & Steel, Tennessee Coal & Iron and United States Steel.

Tuesday, Sept. 19. Heavy selling of stocks on London account forced down prices somewhat in the early trading hours and light sales resulted, the market being reactionary. In the afternoon prices rallied to some extent with moderate dealing. American Locomotive was again an industrial leader, closing well above the day's low point. Interest was centered in reports of foreign purchases of gold for New York shipment, and an irregular market was predicted for some time.

Sloss-Sheffield Steel & Iron Co.

The directors of the Sloss-Sheffield Steel & Iron Co. have declared the regular quarterly dividend of 1¾ percent on preferred stock and the regular semi-annual dividend of 2½ percent on the common stock. The chief feature of the recent meeting, however, was the decision to increase the outstanding common stock by $2,500,000 to $10,000,000, the amount authorized, this stock being paid to the common stockholders as a script dividend equivalent to 33 1-3 percent.

J. N. Wallace, president of the Central Trust Co., New York, was elected a member of the executive committee to fill the vacancy caused by the death of William E. Strong.

The profits for the quarter ending Aug. 31 show an increase of $176,608 over the corresponding quarter last year. This is the income account:

	1905.	1904.
Profit from operation	$ 391,423	$ 214,815
Interests (three months)	52,500	52,500
Taxes (three months)	7,500	7,500
Total charges	$ 60,000	$ 60,000
Net profits	$ 331,423	$ 154,815
Dividend preferred stock	114,000	114,000
Surplus	$ 217,423	$ 40,815
Actual surplus June 1	2,690,366	2,400,395
Total surplus Aug. 31	$2,907,789	$2,441,210

American Locomotive Co.

The fourth annual report of the American Locomotive Co. for the fiscal year ending June 30, shows a decrease in gross earnings of $8,918,549 and a decrease in net earnings of $1,310,098. A reduction of $7,608,451 was made in the expense account and the usual dividend of 7 percent on preferred stock was paid, leaving a surplus of $607,924. In addition to the regular charges, $1,883,556 was invested in the works at Montreal. Additions to other property amounting to $466,952 and other betterments costing $131,251 were made. President Pitkin gives as the reason for the decreased earnings the general depression that prevailed in the iron and steel industry during the winter of 1903-04. The following are the figures of the income account for the year ending June 30, 1905:

	1905.	Decrease.
Gross	$24,150,201	$8,918,550
Operating expenses	19,798,533	7,608,453
Net	4,353,688	1,310,097
Interest bills payable	112,186	126,040
Applicable to dividends	4,241,482	1,184,058
Preferred dividend 7 percent	1,750,000	.....
Balance	2,491,482	1,184,058
Montreal plant	1,883,557	885,567*
Surplus	607,925	2,067,614
Previous surplus	4,812,095	2,675,539*
Total surplus	5,420,020	607,925*

* Increase.

A quarterly dividend of 1¾ percent on preferred stock will be paid Oct. 21.

The La Belle Iron Works Co.

The annual report of the La Belle Iron Works Co., with plants at Wheeling, W. Va., and Steubenville, O., shows a handsome net gain in surplus for the year ending June 30, 1905. The following are the figures for the year:

Gross earnings from operations	$1,186,417
Less interest on bonds	150,000
Net earnings	$1,036,417
Appropriated for dividends	206,580
Net surplus increase	829,637
Surplus June 30, 1904	461,991
Total surplus June 30, 1905	$1,291,829

The company has $7,000,000 stock and $2,500,000 bonds.

Financial Notes.

The General Electric Co. has declared its regular quarterly dividend of two percent, payable Oct. 16.

The regular quarterly dividend of three percent on the stock of the American Pipe Mfg. Co. will be paid on Oct. 1.

The annual meeting of the American Shipbuilding Co. will be held at the company's office in Jersey City, N. J., Oct. 14.

The United Shoe Machinery Co., Boston, has declared the regular quarterly dividend of 2 percent on common and 1½ percent on preferred stock.

Charles E. Morris, iron and steel structural manufacturer of Columbus, O., has filed a petition in bankruptcy, with liabilities of $743,318.38 and assets of $104,047.01.

The Carnegie Steel Co.'s semi-monthly payroll for the Pittsburg district, Sept. 16, aggregated $2,000,000, the largest in the history of the district.

The American Screw Co. declared a quarterly dividend of 1½ percent, with an extra dividend of ½ percent, payable Sept. 30.

The American Shipbuilding Co. has declared a quarterly dividend of 1¾ percent on the preferred stock, payable on Oct. 15.

The Tennessee Coal, Iron & Railroad Co. has declared quarterly dividends of 2 percent on preferred and 1 percent on common stock.

The American Smelting & Refining Co. has declared a quarterly dividend of 1¾ percent on its common stock and a quarterly dividend of the same amount on the preferred stock.

The directors of the American Iron & Steel Co., Philadelphia, have declared a dividend of $1 a share on the common and the regular quarterly dividend of 1¼ percent on preferred, payable Oct. 2.

The directors of the New Haven Iron & Steel Co., New Haven, Conn., at their recent meeting in Philadelphia, approved the annual report which shows gross earnings practically the same as last year and net earnings slightly increased. The question of a dividend was not discussed.

The Plant and Products of The Independent Pneumatic Tool Co., at Aurora, Ill.

As has been stated in a previous issue of *The Iron Trade Review*, the Independent Pneumatic Tool Co., of Chicago, has recently acquired the plant of the Aurora Automatic Machine Co., at Aurora, Ill. It is there manufacturing the "Thor" pneumatic drills and hammers, which it has devised. These tools are shown in some of the accompanying illustrations.

We illustrate herewith two types of the drills made by this company, viz.: the reversible and the non-reversible drill. This differs in a number of ways from other drills on the market. The motive power is compressed air, which is used in four single-acting cylinders placed in the body of the drill. The admission of air to the cylinders is controlled by means of Corliss valves, the valves being placed immediately adjacent to the cylinders. The air is magazined and controlled within 3/8 of an inch or less of the cylinders, and when released acts practically instantaneously upon the pistons. The valves are operated from one double eccentric, which is provided with an individual bearing independent of the crank shaft or of any other working part of the motor. The eccentric is driven from the crank shaft by means of a spur gear. The bearings of the crank shaft are placed close to the crank, which makes a saving in the total length of the motor equal to the length of the eccentric. The feed is telescopic. The feed rod consists of an externally threaded stud and of a sleeve which is both internally and externally threaded. The externally threaded feed rod works through the internally threaded sleeve to the extreme limit, and then the sleeve also works out of the motor an equal distance; thus giving a feed practically double that which could be obtained with an ordinary single feed rod.

The motor is extremely accessible. By removing the exhaust caps, either valve may be taken out without disturbing any part of the motor. The pistons may be removed by unscrewing the cylinder head, and the connecting rods may also be removed through the cylinder bore without disturbing any other part except the pistons. By taking off the gear case, all the other parts of the machine are accessible. The case of the motor is made with but one joint.

The cylinder and gear case are made of steel castings.

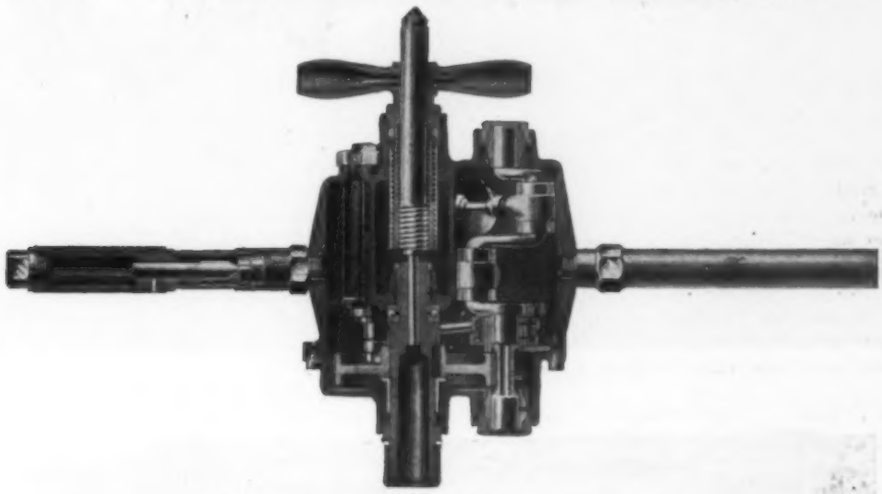


FIG. 1.—SECTIONAL VIEW OF NON-REVERSIBLE DRILL.

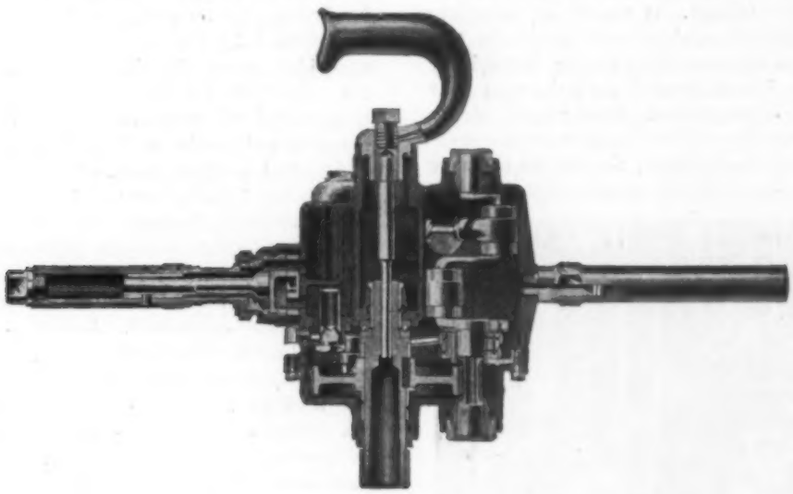


FIG. 2.—SECTIONAL VIEW OF REVERSIBLE DRILL.

All wearing parts are either steel forgings or are turned from solid steel stock. The manner of accomplishing these various operations will be shown later in the description of the plant.

The reversible drill. shown in Fig. 2, has the same general features as the non-reversible, with the exception of the device for admitting air to the cylinders so as to cause the drill to rotate in the opposite direction. This is done by sending the air through the exhaust port into the valve chamber and thence into the cylinders, instead of by the usual route. This result is accomplished by means of a simple two-way valve which is placed in the admission chamber at the inner edge of the inlet pipe, shown at the left of the illustration.

Two general types of hammers are made, sectional views of which are presented herewith.

Fig. 3 shows the duplex valve chipping hammer, and Fig. 4 the one-piece auxiliary valve long-stroke riveting hammer.

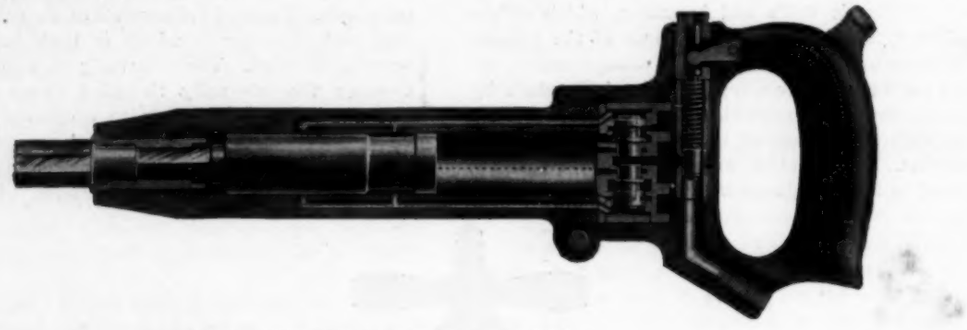


FIG. 3.—DUPLEX VALVE CHIPPING HAMMER.

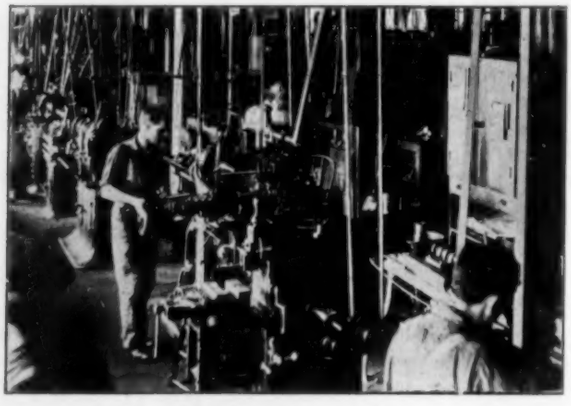
FIG. 4.—ONE-PIECE AUXILIARY VALVE LONG-STROKE RIVETING HAMMER.

In Fig. 3 the air enters through the inlet below the being controlled by the trigger. It enters the chamber at the rear of the cylinder and presses apart the two valves in this chamber, allowing air to enter behind the piston. The piston is driven forward until the port near the end of its stroke is uncovered. This admits air to the outer side of the valves, and as the area of the outer side is larger than that of the inner, the excess pressure causes the valves to close. Air is then admitted to the opposite side of the piston, driving it back until the port near the end of the stroke is again covered, when the valves will again be forced open; thus repeating the operation.

The building in which these tools are manufactured is five stories high, and 50 x 152 ft. in dimensions. It is built of brick with windows on all four sides. The building was originally three stories high, the additional floors being added as occasion required. The Aurora Automatic Machine Co., which formerly operated the plant, built gasoline engines and motor cycles, and bicycle parts, as heretofore mentioned.

The largest amount of work is done on the second, third and fourth floors. Nearly all pieces excepting the drill casings are turned from solid steel stock. The amount of work done in the plant can be estimated from the fact that the production of chips average over two tons daily.

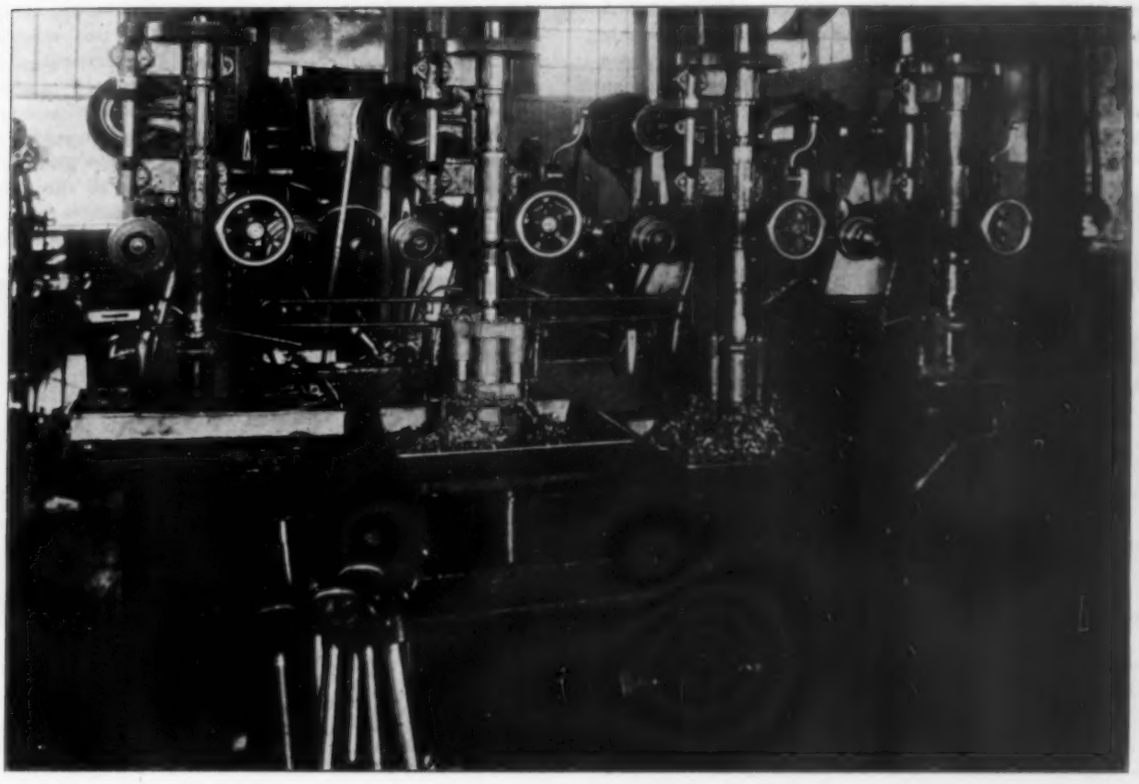
On the first floor of the building is the blacksmith shop where light forgings are made, and where also the hardening and tempering is done. The rest of this floor is occupied by the polishing room, nickel plating plant, sand blast room, shipping room and office. On this floor are also installed two air compressors, which furnish compressed air used in various operations around the shop, as well as for testing the pneumatic tools.



SECTION OF TOOL ROOM.

All steel working parts of the various machines made are hardened and ground as has been previously said. In the blacksmith shop are four heating furnaces, used for hardening. which are run with illuminating gas. Both oil and water baths are used for hardening the pieces, and a great amount of case hardening is done, bone-meal being the principal agent used. A small amount of case hardening is done by means of cyanide.

Directly across the hall from the blacksmith shop, at the back of the building, is the polishing room. There are installed in this room about a dozen emery grinders of various sizes and capacities. These are arranged in two rows. The dust from the grinding is removed from the room by the means of a 40-in. Sturtevant fan, which blows the dust into a cesspool outside the building. A galvanized iron duct leads down to each wheel from this fan, and all dust is sucked up and removed from the building as soon as it is made. The room is much pleasanter than a grinding room usually is, and a much better



HEAVY DRILLING MACHINES.

place to work in than might be expected from the character of the work done.

On the second floor of the building is the tool room. This room contains a large number of machines, including lathes, milling machines, shapers, grinders, etc., and about a dozen men are continually employed in looking after special tools, in making and repairing jigs and new tools, and in keeping the special tools in shape for the men. All tools used in the shop are checked out from the tool room, excepting lathe tools and tools which belong essentially to a given machine. Milling cutters, drills, reamers, and all special tools are ground in the tool room, on special grinding machines of the most approved design.

On the second floor of the building, in addition to the tool room, there are located the following departments: Punch press department, planers and shapers, heavy drilling and light drilling departments.

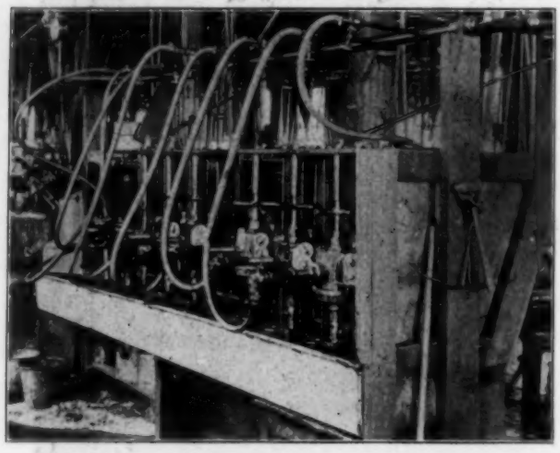
An illustration is shown of a bank of heavy drills installed on the second floor, which are used for drilling motor cycle engine cylinders, and hammer forgings. The two drills in the center are at work on the cylinders. These are powerful machines, being driven entirely through back gears. The cylinders are turned on the third floor in a forming lathe, which will be described later. They are then brought down stairs and drilled. After being drilled they are taken to the blacksmith shop and hardened, after which they are taken to the third floor and ground to size. For drilling, the cylinders are held in a jig which is operated by compressed air. While being turned in the forming lathe, a shoulder is made on each end, and one of these shoulders is placed in a hole in the lower portion of the jig, and a valve in the compressed air pipe leading to the jig is opened. The compressed air draws the upper portion of the jig down over the cylinder, a conical hole engaging the shoulder on its upper end and centering it. The drill is then started and continues until the cylinder is completely drilled through. Soap water is fed to the drill in copious quantities during the entire operation.

The light drilling department comprises about 20 drill presses, installed in one corner of the floor. In these machines are drilled bicycle hubs and various portions of the pneumatic tools. All these drills are fitted with pneumatic jigs similar to those used on the heavy machines, although of a much lighter character. A particularly interesting jig is the one used in drilling the cup in the bicycle hub for the insertion of the ball races. This is a jig which is closed by compressed air, and which is mounted on trunions so that the cup may be drilled first in one end and then in the other, without removing the hub from the jig.

The punch press department comprises 11 presses of various sizes which are engaged in the muanfacture of parts for the motor cycle engines and pneumatic tools. Among the parts may be mentioned nipple washers, lock nuts, etc. One press is fitted with a three-piece die and is engaged in making nipple washers for bicycle wheels. Each die performs a separate operation, and the completed washer is strung on a wire. The raw stock is fed to the punch in the form of a steel ribbon. The first operation consists of punching out the center, leaving a hole with a serrated edge. The second die forms this edge, and turns it vertical, and the third die cuts the nipple loose from the stock. It then falls through a hole in the die, and drops on to a wire, which is removed when filled, and a new wire substituted.

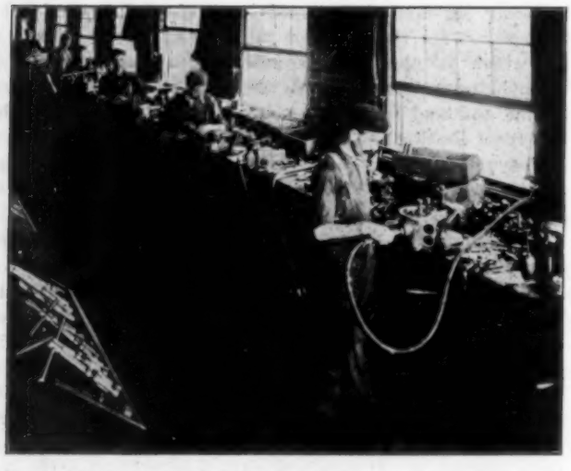
On the third floor are the automatic screw machines, chucking machines, the parallel grinding machines, and the racks for testing and limbering of the pneumatic tools. On this floor, also, the pneumatic tools are assembled. Altogether there are about 65 automatic screw

machines and turret lathes, most of which are engaged in making the cylindrical parts for the pneumatic tools. A number of them are engaged in the manufacture of bicycle parts and motor cycle engine parts. The machines are arranged, staggered and grouped so that one man can attend to about six machines. There are six Jones & Lamson flat turret lathes on this floor, which are used entirely on pneumatic hammers. These tools have given



LIMBERING RACK FOR RUNNING NEW DRILLS.

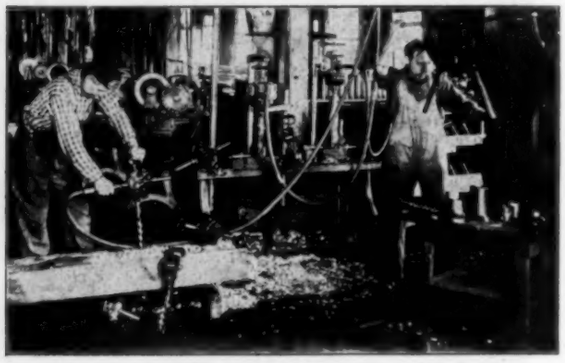
good satisfaction, and bear an excellent reputation for turning out heavy work rapidly and accurately. A rather interesting tool is the forming lathe used in turning motor cycle engine cylinders. The raw material for this machine is a piece of 5-in. cold rolled steel shafting. There are two sets of tools; one at the front and the other at the back. The two sets of tools cut all the grooves which form the radiation ribs on the outside simultaneously. The set of tools on the front are the roughing tools and the set on the back are the finishing tools. The time required to cut the grooves into one cylinder is about 20 minutes. An interesting feature of this machine is the power hack-saw attachment, which is fitted to it for the purpose of cutting off a finished cylinder, while the next one is being turned. This cutting off attachment is sim-



ASSEMBLING PNEUMATIC TOOLS.

ply an ordinary power hack saw removed from its base and mounted on the former lathe. It is driven by a belt from the line shaft, and saws the finished cylinder from the stock while the latter is rotating.

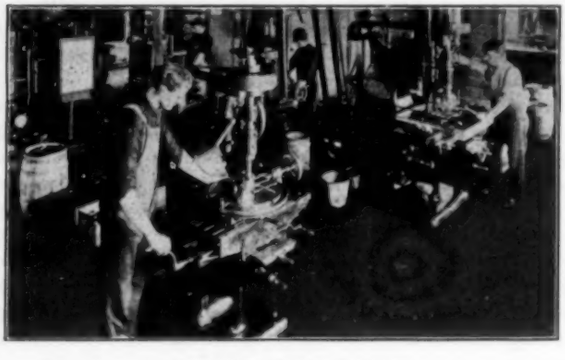
Another noticeable machine is a traverse milling machine which has been fitted up to finish crank hangers for motor cycles. These are in the shape of a flat forging, and are placed in the jig mounted on the table of the milling machine. The machine has two over-hung spindles in line with each other, carrying cutters on their ends. These cutters are fitted with inserted teeth and surface the crank hanger to the requisite thickness, the two cutters working on each side simultaneously. The jig which holds the crank hangers is a large plate somewhat thinner than the finished thickness of the hanger. It is fastened firmly to the table of the machine by means of angles. The crank hanger is placed in an opening in



SHOP TEST OF WOOD AND METAL DRILLS.

the plate, which is of the same shape as the hanger, and is held there by a pair of set screws. By this means it is held firmly and is easily machined. The shape of the piece is such that it would be a rather difficult job to mount it on a lathe or boring mill to surface, and by using the milling machine the job is done easily and much more rapidly than would be possible otherwise.

The gas engine cylinders after being hardened are brought up to the third floor and ground to size. The grinding department is shown in one of the illustrations. The cylinders are held in a jig, consisting of a casting made of two heavy rings joined together. In these iron rings are fitted two steel rings, which are hardened, and which take the shoulders turned on the outside of the cylinders. The cylinder is placed in the rings and then fastened in place by a lock nut. The cylinder is rotated by means of a belt from the line shaft, and the bore is ground out by means of an emery wheel, which traverses the length of the cylinder. A limit of error of less than



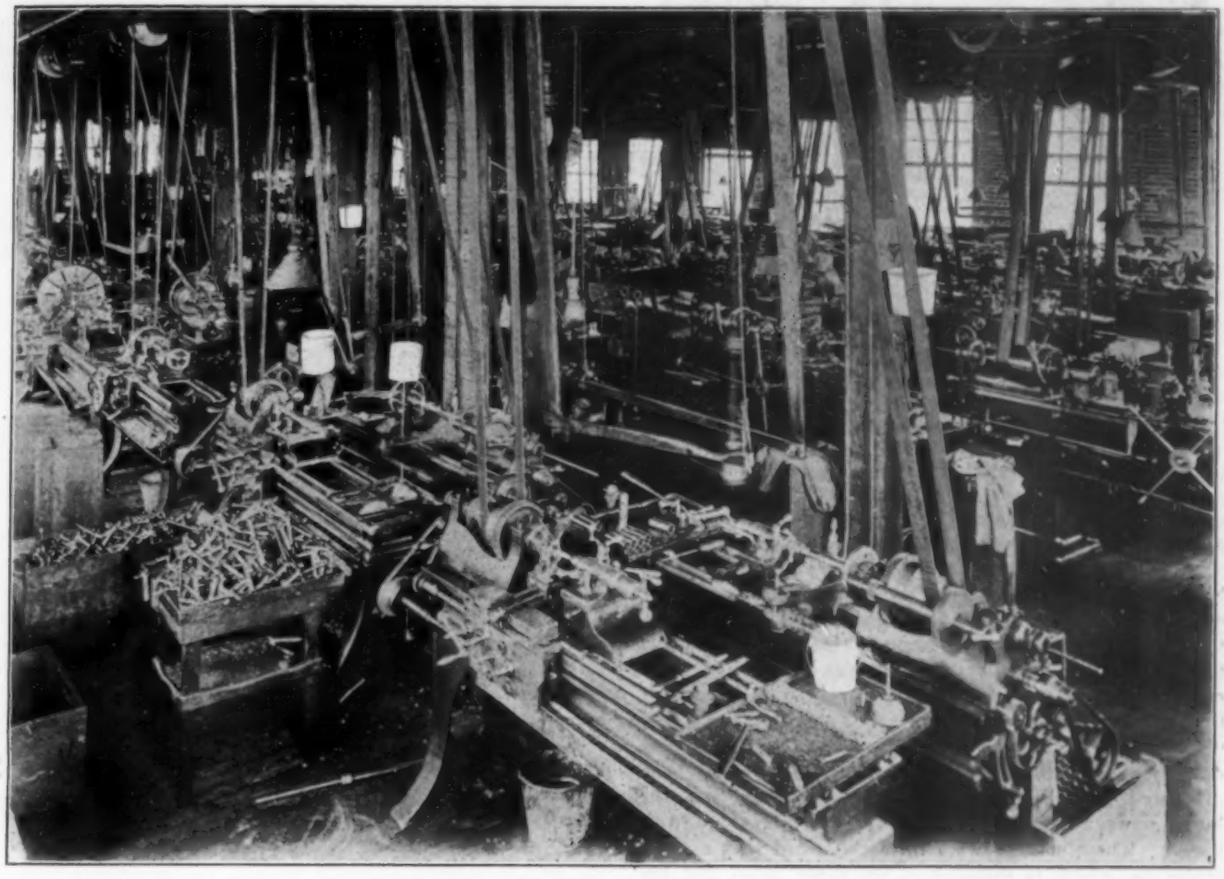
DIE SINKING MACHINES.

1-1000 of an inch is allowed. The grinding machines are all fitted with micrometer adjustments and the cylinders themselves are measured by means of an internal micrometer. The same method is followed on all the parts of the pneumatic tools, they being ground in the same machines as the gas engine cylinders, and after being ground

are lapped to size. The same accuracy is required on the parts of pneumatic tools as on gas engine cylinders. The dust from the grinding machines is removed by means of a suction fan and delivered to the cesspool outside, as heretofore mentioned.

On the third floor the pneumatic tools are assembled. This is done at benches extending along one side of the building, and along which a pipe for supplying compressed air is run. At each vise a connection is provided with this pipe. so that each man engaged in assembling has a constant supply of compressed air for use in testing the tools as he assembles them. Any defects which are discovered can thus be remedied before going any further. In addition to the test given in the assembling, the drills are run for eight hours through a limbering rack, which is shown herewith. The drills are mounted in this rack and a pressure is placed on them equal to that which they will sustain under the most severe conditions of practice, and the compressed air is then turned on. Any defects in the construction or workmanship which have not been discovered in the assembling can hardly escape this latter test. In addition to the limbering test, the machines are given a final test in the actual drilling of metal. They are mounted on a small bench and run through a heavy block of steel under service conditions. The drills for use on wood are caused to drill a number of holes in a block of oak and yellow pine. The drills undergoing this test are also shown in one of the illustrations. In the same illustration is shown the machine for placing brass bushings in the air motors. This machine is simply a press operated by hand power and a plunger forces the bushings into place. The pneumatic tools shown in this illustration are extmerely powerful machines. One of the motors in the rack is drilling 4-in. diameter holes in cast iron. A small Thor wood boring machine with a 2-in. diameter wood bit is drilling yellow pine at a speed of 2 in. per second.

On the fourth floor are installed two profiling machines, three vertical milling machines, and 14 other milling machines and gear cutters. In addition to these machines, one-half of the floor contains the lathe department. A particularly interesting tool on this floor is the vertical turret lathe. This latter tool, which is shown herewith, is a combination of turret lathe and boring mill. It is an extremely handy tool and a large number of operations can be accomplished in it. It is principally used for finishing the casings for the pneumatic drill motors. The work is mounted in a jig on an auxiliary table, which is in turn mounted on the main table of the machine. This auxiliary table can be shifted on the main table so as to bring any part of the work under the tool. The work done consists in drilling the valve chambers, reaming them, counter-boring and surfacing off the top of the case. The tool has been in service about a month and has given universal satisfaction. The vertical millers and profilers are used on a great variety of work, both for the Thor pneumatic tools and for the bicycle and motor cycle engine parts.



LATHE DEPARTMENT.

An idea of the size of the plant may be obtained from the accompanying illustration of the lathe department on this floor. Only about one-half the machines are shown. While a great number of these machines are engaged in doing lathe work after the ordinary fashion, the majority of them are fitted with special devices for doing the work required in the making of Thor pneumatic tools. Nearly all the work is done to micrometer measurements.

It is in this department that the pistons for the Thor pneumatic drills are finished. They are turned in a lathe and afterward ground, with an allowable limit of error of 1-1000 of an inch, and after being ground are put in a lathe and three grooves about 1-16 in. wide and about 1-100 in. deep are scraped in them. No piston rings are used, these grooves filling up with moisture and oil and making the piston practically air tight.

On the top floor of the building is located the drafting room and several other departments. These comprise the testing room for motor cycle engines, the experimental

VERTICAL TURRET LATHE.

room in which new devices are worked up and tried, and a department for giving pneumatic hammers practical service before they are put on the market. Some assembling is done here also. The rig for testing motor cycle engines is shown in one of the accompanying illustrations. The engine is mounted on a heavy wooden frame, together with a Sturtevant fan to which it is belted. The exhaust pipe of the fan is carried over so as to deliver the air directly on to the engine, thus assisting in cooling it. With the fan in use the load on the engine increases directly as the revolutions of the fan. The fan has been calibrated by comparison with a Pony brake and the horse power required to run it at any given speed is known. These engines were formerly tested with a Pony brake rig, which is installed in the same room, but the fan-testing apparatus was found to give much quicker results.

The device used for putting pneumatic hammers through their paces is also interesting. Two plates are fastened together by means of rods threaded on each end, the plates being kept the requisite distance apart by pipes through which the rods run. These plates have a large number of holes punched in them, and strips about 1½ in. wide are riveted right across their face. One operator puts the rivet in place and holds it with a pneumatic hold-on, also manufactured by this company. The other operator drives the rivet home with a long-stroke riveting hammer, which is just as it would be done in service. When both plates comprising the frame work are filled, they are taken off and new ones substituted.

The power to run the first three floors of the plant is furnished from the power house. A large engine is installed in this house and rope transmission is used from the engine to the factory. The main line shafts on each floor are belted from the rope drive and drive jack shafts, which in turn drive the counter-shafts to the various machines. On the two upper floors electric power is used, current being obtained from a 75-h. p. generator installed in the power plant.

The method of disposing of chips is extremely simple and efficient. At one end of the building a galvanized iron pipe 18 in. in diameter extends from each floor to within about 18 in. of the floor below. A galvanized pan with its edges raised about 4 in. from the floor surrounds the mouth of each pipe. The chips on each floor are dumped into this pan, being brought there from various machines in wheelbarrows, and then are shoveled down the pipe. On the lower floor they drop into a wire basket and are allowed to remain there until the oil is drained off of them. The oil is then put through a filter and used again in the machines. The chips are sold to dealers in scrap, who in turn sell them to the mills to be worked up again to finished stock.

The finished material and material upon which work is being done are conveyed between the various floors by means of an electric elevator, and several hand elevators installed in convenient places in the building.

The entire plant shows forethought in the use of the jigs and special fixtures, and great care is taken that the workmanship is of the best. It is evident that the same careful foresight and inspection is being exercised in the manufacture of the pneumatic tools as has been exercised in the manufacture of the earlier products of the company.

TESTING MOTOR CYCLE ENGINES.

In the nickel-plating room there are eight baths, two of which are used for copper plating and the other six for nickel plating. Current is supplied to these baths by means of a direct current dynamo driven from the line shaft. The dynamo furnishes 800 amperes at a pressure of eight volts.

Annual Report of Keen & Nettlefolds Co., Ltd.

At the annual meeting of the shareholders of the Guest, Keen & Nettlefolds Co., Ltd., held at Birmingham, Aug. 29, a very satisfactory report was presented. The plate mill at the Cardiff works, recently improved by a modern furnace plant, has had a good run of orders. The output and quality of material from the steel furnace at work upon the Talbot continuous process is considered satisfactory, but the trial has not been made long enough to know the cost of repairs which the company must find out before adopting the method on a more extensive scale.

MARKED IMPROVEMENT IN ENGLAND.

ANNOUNCEMENT OF PEACE STIMULATES IRON BUSINESS IMMEDIATELY.

Advances in Prices Announced—Leading Houses Hurrying Representatives to the Far East.

(Special Correspondence.)

BIRMINGHAM, ENGLAND, Sept.—This has been the most remarkable week in the iron trade for years past, the marked improvement already reported having suddenly developed into a boom. The final stimulus was given by the news of the peace settlement, which seems to have convinced everybody that the time had come to buy. Merchants absent from the market for months past put in an appearance on Thursday, all eager to renew their stocks, while makers of finished iron with one accord came forward with substantial orders for pig iron. The result was a general rise in prices. Quotations for pig iron refused a fortnight ago were now withdrawn, one firm in this way having to pay 1s 6d more per ton than would then have been accepted.

The well-known firm of Messrs. Bradley, iron smelters of Tipton, refused orders representing about 800 tons. All descriptions of pig iron were from 1s 6d to 2s dearer. Finished iron advances practically covered all descriptions. Common bars were generally raised half a crown being of the figures from £5 17s 6d to £5, a similar advance being determined upon at a meeting of the Gas-strip Managers' Association, raising the price to from £6 to £6 2s 6d. Steel strip makers raised their minimum to £7, an advance of 5s; and black sheets were advanced to £7, for a ton for 24 guage, or about 2s 6d.

Advance in Structural Material.—For all descriptions of structural steel, an advance of 5s was readily obtained. For galvanized sheets there have been two advances during the week. The first advance added half a crown, making the figure £10 15s, but a further meeting in London on Sept. 4 determined upon a further rise to £11 f. o. b. Liverpool, but sellers find no difficulty in getting £11 5s, so that other advances of the standard may be expected. A tremendous demand has sprung up, leading works being booked for several months ahead. The increase is partly accounted for by the rapid rise in spelter. Galvanized hollow-ware makers have within the past few days decided on a general advance of 5 percent on all classes of goods; accompanying this announcement with a warning of further advances on buckets, pans and similar ware. This branch of the trade is taking a strong attitude on the question of prices, and the following firms are included among those affected: Messrs. Roberts & Cooper, Stourbridge; Joseph Ash & Sons, Birmingham; Davis Bros. & Co., Wolverhampton; J. C. Holcroft, Dudley; J. Lysaght & Co., Wolverhampton and Newport, Mon.

Tin plates are dearer and the market has been strengthened by the expected revival of the Russian oil trade, which was practically stagnated by the war.

Furnaces Going into Blast.—In regard to pig iron, preparations are being made to put furnaces into blast in several districts, Messrs. Bradley & Co. having just restarted one, while the Dufferin Tinplate Works at Morriston are building a 45-ton furnace, constituting the third steel furnace at these works.

The first fruits of peace have already been realized in the placing of substantial bridge orders from Japan with the Patent Shaft & Axletree Co. at Wednesbury, while very good lines for rolling stock have been secured by the Metropolitan Amalgamated Co. Further orders directly resulting from Japan's influence in Korea and Manchuria are expected, and leading houses are hurrying forward their representations in the Far East with a view to business.

Troubles of the Screw Combine.—Already there are signs that the recently-formed Anglo-German screw combine will not have very plain sailing. Messrs Richard Johnson, Clapham & Morris, Ltd., of Manchester, have issued a circular in which they say that they intend to continue the importation of foreign screws. On the other hand, Messrs. Finnie & Co., Glasgow, one of the largest buyers of German screws, have just issued a warning to their customers to the effect that as a result of the combine, the British market may shortly be closed to the import of German screws, and that higher prices may be looked for. Widespread doubts are expressed as to the success of the agreement in view of the fact that four years ago a similar effort by Messrs. Nettelfolds was defeated owing to the arrival of new competitors in the feld.

Many New Ships Ordered.—The shipbuilding trade is rapidly increasing its activity. The work now on hand at Port Glasgow will total up to fully 130,000 tons, while the Clyde shipbuilding returns show a total tonnage for the eight months of 344,000 tons, the largest since 1901. New shipbuilding orders are quite too numerous to mention. Messrs. W. Grey & Co., West Hartlepool, have booked a steamer 7,100 tons burden at a price approximating to £41,000. Very substantial orders have also been placed with Messrs. Blair & Co., Howden-on-Tyne, and Robert Stephenson & Co., Newcastle. At Belfast, Messrs. William Clark & Co. have lately secured important orders for ocean-going ships. Messrs. Caird & Co., Greenock, are building two cargo steamers for the P. & O. and it is announced that the Japanese Consul at Glasgow is about to place, on behalf of the Nippon Steamship Co., of Japan, orders for six or eight new liners with various Clyde firms.

Within the past few days the heavy armour plates for battleships in course of construction have been placed with the following firms: Messrs. William Beardmore & Co.; John Brown & Co.; Vickers, Son & Maxim; Campbell Laird & Co., and the Armstrong Whitworth Co.

Peculiar Labor Question.—There has been a curious labor development in connection with the Islip Iron Co., of Kettering, Northampton. Some weeks ago the firm issued a notice to the effect that it had determined in future not to employ union men. They prepared to give an undertaking not to join any association of ironmasters. The men held one or two meetings, their association making a strenuous effort to defeat the firm; but the latter had no difficulty in inducing the requisite number of workmen to sign the agreement and work has proceeded as usual. A good deal of trouble has been caused in the district by the efforts of the union to introduce the eight-hour system. So far no Northampton firm has adopted it, but its partial introduction into Derbyshire has proved a most disconcerting and troublesome element in the competition between the various furnaces.

THE AVERY STEEL TIE.

The Avery Stamping Co., Cleveland, has recently brought out a steel tie which combines to a remarkable degree the elements of simplicity, strength, lightness and accessibility. The tie is made entirely from structural section and steel plate and is manufactured by the ordinary processes of cutting and stamping. It is shown in the accompanying illustrations. In Fig. 1 are shown the component parts of the tie, and in Fig. 2, the tie assembled. Referring to Fig. 1, the essential parts of the tie consist of the tie bar, which for 110 lb. rails is made of 3 in. x ⅜ in. tee bar and two chairs which are stamped from ⅜ in. steel plate. The vertical member of the tee bar is cut away as shown, leaving a hook and a shoulder, which is termed the lock.

FIG. 1.—COMPONENT PARTS OF AVERY STEEL TIE.

The chair is stamped into the shape shown, a hole being punched into one side corresponding with the shape of the tee bar, and a larger hole in the opposite side. In the top of the bar there is cut a slot and two leaves are punched out on either side of the slot and bent so as to form hooks which will engage the rail closely.

In laying the track the tee bar is slipped through the large hole on the inside of the chair and through the smaller tee-shaped hole on the outside. The hook on the bar projects up through the slot in the upper surface. The rail is placed on the chair one side of the flange being under the hook on the bar. The chair is then drawn outward until it drops against the shoulder on the bar. The leaves before mentioned have then come into close engagement with the inside flange of the rail and have drawn it tightly against the hook on the bar. The entire rail is thus held firmly in place, the chair being prevented from slipping back and releasing the rail, by the shoulder, or lock, as it is termed by the maker.

The claims advanced by the maker for this tie are: It is the lightest steel tie in the market, weighing for 110 lb. rails but 97 lb. complete. It possesses a larger amount of tamping surface than an 8 ft. wooden tie with an 8 in. face, the amount of tamping surface in the two cases being respectively 768 square inches, and 772 square inches. The tie possesses strength where needed, the entire weight of the train being carried on the chairs and the ballast immediately under them. The chairs being open at the sides permit the ballast to be thoroughly tamped underneath them, and having sloping ends are held down by the ballast. In order to remove the rail from the tie, any maliciously inclined person would be under the necessity of digging the ballast away from the chair before it could be raised and unlocked. Any attempt to do this would immediately become evident to the track inspector or engineman. The track is always perfectly gauged and aligned, as the hooks are positive and cannot be altered as regards their position.

When it is desired to remove the tie, all that is necessary is to remove the ballast and insert a crowbar under the upper edge of the chair. By raising the crowbar and throwing the chair toward the inside of the track it is lifted free of the lock and drawn away from the rail thus rendering track repairs an extremely easy matter.

The form of tie, as illustrated here, is unsuitable for introduction into a roadbed when the rails are in place as the hooks cannot be slipped over both rails while they are in gauge. A slightly different form of tie is provided for this purpose. It is similar in all respects to the one shown here, excepting that on one end the hook is cut away, leaving a shoulder similar to the lock. The same chair is used, and, in addition, a clamp which rests against the shoulder and against the outside of the rail replaces the hook. The clamp is drawn firmly down on the web, holding it in place. It will thus be seen that only one bolt and nut is needed in any case, while for new track no bolts or nuts at all are necessary. The tie may be made in several different forms, retaining, however, the essential features of the lock and chair. Different sections, such as straight bars, channels or I beams may be used for the tie bar, and various forms of clamps may be applied for such railroads as desire to use them.

FIG. 2.— AVERY STEEL TIE, ASSEMBLED.

THE JOY AUTOMATIC HOSE COUPLER.

The National Pipe & Hose Coupler Co., Detroit, Mich., has recently put on the market a hose coupler shown in the accompanying illustration. The maker claims that this is the tightest hose coupler known. A joint can be made with extreme rapidity and can be made in only one way.

The union is formed by a cam in one end having offset lugs. A quarter turn with one hand drives these lugs home. The cam compresses the washer longitudinally and thereby expanding it laterally. The washer is the integral part of the coupler and cannot be lost. When worn out it is only necessary to unscrew the hexagonal nut from the coupler and replace the washer.

The coupler is particularly handy in car building shops, ship yards, mines, bridge building, railroad shops and structural iron work. When the sockets are near the floor or in dark places the connections can be made by the sense of touch. It is merely necessary to insert the coupler in the socket and make a quarter turn until it snaps. The joint is then tightly made and there is no guess work or crossing of threads. A quarter turn in the other direction uncouples it.

THE JOY AUTOMATIC HOSE COUPLER.

Air-Compressor Lubrication.

Excess of lubrication, in addition to waste, means increased accumulation of combustible matter, increased lodgment of dust and increased danger of accident. Just as little lubricant should be used as possible.

Two lubricants are in general use on air-compressor cylinders, a mixture of soap and water, and cylinder oil. Either can be made to do the work. The mixture of soap and water has inferior lubricating properties and must be used in quantities. One case of explosion is reported where soap and water was used almost exclusively. A test of the deposit found in this receiver after this explosion showed that readily ignited at 400 degrees F. This deposit was two inches thick. The mixture of soap and water was also tested in a laboratory. Upon being evaporated down to a "black, semi-solid mass" it ignited at 500 degrees F. In addition to this soft-soap lubricant there had been used some oil having a burning point of about 400 degrees F. The principal combustible ingredient in the deposit was coal dust. This case is sufficient to show that the use of soap and water is not a sure preventative of accident. In fact, it goes further and shows that soap and water may not be as good as oil, for the tests showed that it burned readily when dry, and inasmuch as more of it would have to be used than of oil, the deposit of dust would be correspondingly greater. Nevertheless, soap and water may be used to good advantage and provision should be made for its introduction into the cylinder when necessary.—[Mines and Minerals, September.

MODERN ORE DOCK

Will be Built at Marquette—Other New Docks are Proposed.

President W. F. Fitch, of the Duluth, South Shore & Atlantic road, in reply to a query as to new dock construction by his road the coming winter, states: "We shall build a large modern ore dock at Marquette this winter, the cost of which I am not at present prepared to give. This dock will be as high as any on the lakes, and will be built to accommodate the very large ore carriers."

While Mr. Fitch does not so state, it is understood that this dock will be 73 ft. high and will be equipped for the loading of the largest ships likely to be built on the lakes for many years. It will occupy the space formerly taken by No. 3 dock, which was razed three years ago, the foundation of which is still partly in place. Tracks to the dock will cross Front street, on a plate girder bridge over the street, permission to build which has been given by the city. On account of the fact that the present South Shore ore docks are low, the higher of the two being but 47.25 ft. above water, only the smaller ships of the lake fleet have been sent there recently, which has delayed shipments and made a tax on the company's facilities. This dock is to be ready for navigation next spring.

There are to be several new and large docks during the coming winter. The Chicago, Milwaukee & St. Paul road is to built one at North Escanaba. It now has a small ore dock there, with capacity for about 33,000 tons, and the proposed structure is to be higher, wider and more than 50 percent greater capacity. The road will have from 80,000 to 90,000 tons storage when it is completed.

It is said to be very probable that one or two new docks may be built at the head of the lakes this year, one probably by the Duluth, Missabe & Northern, which now has three of a capacity for 200,000 tons.

Upbuilding Our Merchant Marine.

BY F. G. BAILEY,*

(President Export Shipping Co., New York.)

The fiscal policy of our nation has increased the products and sales of merchandise from $1,000,000,000, in 1850, to $15,000,000,000 in 1905. Although this is 1,500 percent increase, the population has increased but 400 percent and it is apparent that our manufacturers are rapidly gaining on our population. It is pertinent to consider how long the population will be able to absorb our manufactures which show no signs of diminution but, on the contrary, have every indication of an increasing ratio.

F. G. BAILEY.

During the year ending June 30, 1905, the exports from the United States were valued at $1,518,562,000, of which $50,000,000 represented manufactured products, the balance being raw materials. The imports during the same period were valued at $1,117,512,000. The import movement consisted almost entirely of manufactured products. The vessels employed to transport this immense quantity of merchandise aggregated 31,000,000 net tons register, this being the approximate tonnage entered and cleared at United States ports during the period mentioned. Of this tonnage only 7,000,000 or 22 percent carried the American flag.

In 1900 the annual production of manufactured articles was estimated as follows: United States, 13 billions; Great Britain, 5 billions; Germany, 4 2-3 billions; France, 3½ billions; Austria-Hungary, Russia and Italy about 2 billions each. This, of course, represents the total, and of the entire quantity of 32 billions four billions constituted the world's export commerce, and the United States furnished $500,000,000 or 8 percent, which in the grand total we show over 40 percent. It is true our domestic needs absorbed the 92 percent, but we cannot rely on this continuing to be the case.

We are the greatest producer in the world of raw materials entering into manufactures. We possess the coal, the iron, the machinery, the capital, and best of all, the ability to produce in large quantities on an economical basis. While our protective tariff has enabled us to attain our present position, does our present policy present the best means of retaining this position?

A European war is not an apparent probability; but is it not a possibility, and what would be our position in the event that Great Britain, Germany, France and Italy, all or any of them, became embroiled. These countries practically control the transportation facilities of the ocean and should their tonnage be withdrawn from commercial use for even a brief period, the result to the United States would be a period of panic.

Prepare for War.

In time of peace prepare for war. Not necessarily a war of our making but at the same time we have had a quite severe lesson on our own side of the part to be played by a mercantile marine in event of war. Our policy provides for an increasing navy, which is of actual value only under certain conditions. The same wise precaution which provides for this condition should and eventually must provide means whereby, in a contingency, we shall not be in a helpless condition in forwarding our export trade.

The present laws regulating the building and operation of vessels make it an impossibility to operate them in the oversea trade under the American flag at a profit in competition with the ships of other nations. As regards our coastwise or domestic commerce the conditions do not appear to be so onerous. This commerce is reserved exclusively to vessels built in this country, and, therefore, have no competition and are able to remunerate their owners for their outlay in construction and operation by reason of the higher rates obtained. But such vessels cannot compete on equal terms with foreign built boats. Inasmuch as the increased cost of construction and operation of American ships is occasioned entirely by reason of existing conditions, high price of materials and of labor, and that by reason of these high prices the country has been brought to its present degree of prosperity, it does not seem presumptuous to ask that the country at large contribute to the upbuilding of our mercantile marine. If the continued prosperity demands that the present conditions continue in force, let those who are benefited by these conditions, the manufacturer, the artisan, the merchant, contribute to the cause that maintains their welfare.

It is more essential to our well being as a nation that we have a mercantile marine than that we have a navy. The one is absolutely necessary at all times; the other is indispensable to maintain and safeguard our dignity as a nation. But if we are to assume our proper place among nations, let us at once take the steps necessary to put ourselves at the front.

Sentimental Reasons.

Outside of the practical reasons to be advanced for our immediate participation in some plan to plant our flag once more on the seas there are many sentimental ones,

*Mr. Bailey is a Pennsylvanian, born at Beaver, that State, in 1868, and was graduated from the Western University of Pennsylvania in 1888. After college he entered the services of the Pittsburg & Lake Erie Railroad Co. in the general freight department, where he remained four years, leaving to become traffic manager for the Oliver interests, of Pittsburg. These interests, which comprised the Oliver Iron Steel Co., Oliver Wire Co., Oliver Coke & Furnace Co., Oliver Iron Mining Co., as well as the general superintendency and secretaryship of the Allegheny & Southside railway. He served six years, or until they were merged with those of the United States Steel Corporation.

Upon the formation of the United States Steel Corporation and the absorptions of the Oliver plant, Mr. Bailey, who had long been interested in the development of our export trade, realizing its possibilities, formed in the Export Shipping Co., and became aggressively associated with everything that pertained to the opening of the foreign markets for American manufacturers. The business of the company in its early history was small, but the untiring efforts of the president soon created confidence, and branches are now established in all of the important ports of the world, with correspondents and agents wherever American merchandise has a market. In the interests of his company and to more closely study markets and transportation facilities, he made several trips to Europe, Canada and Mexico.

In addition to his duties as president of the Export Shipping Co., Mr. Bailey is president of the American Floating Exposition, which enterprise he has organized in the interests of American export trade, the practicability and advantages of which had been impressed upon him through business associations and emphasized by his own personal knowledge of trade conditions abroad.

Mr. Bailey is a close student in the particular department of commercial development he has chosen for his life work. He is a practical observer and thoroughly familiar with the principles, theories, practice and details of all methods of transportation; contributions upon his own chosen subject are, to say the least, based upon a thorough acquaintance with conditions, gained by careful investigation.

and even the least sentimental of our citizens admits to a feeling of pride in the advancement of the country of his birth or adoption. But the fact is so apparent we cannot escape from it. We are furnishing an immense tonnage for transportation and allowing foreign nations to reap all the benefits derived from the revenue so produced whereas this same money could all be kept in our own hands and used in creating further vehicles and furnishing employment to a half million of men on land and sea.

The supremacy of other nations in water borne commerce transportation was gained and is maintained only by means of government aid-laws to assist and protect the ship owner have been enacted and financial assistance in the way of ship subsidies have been fully granted. The result is that while other nations have aided their own ship owners we have also been compelled to contribute very largely to the support of such owners through being forced to pay liberally to have our mails, as well as cargo, transported.

Not Class Legislation.

The first impression which the public receives when a ship subsidy bill is suggested is that of class legislation. This, however, is not the case. Very few have stopped to consider what the question means, looking only at the side that public monies are to be expended for the benefit of what they consider a few interested ship owners—not taking into consideration that ships built and owned here not only allows capital to be employed in home industries and furnishes employment to a vast army, but also affords the government, that is ourselves, an opportunity of spending our own money on our own enterprises for our own good. Money, which is not used in promoting home industries, must be devoted to maintaining those owned and supported by other nations.

There is abundant evidence to support the belief that the Japanese government is engaged in a systematic attempt to build up a formidable mercantile fleet. A fair start has been gained through the acquisition of blockade-running vessels by capture in the present Russo-Japanese war. Our Pacific coast is very likely to feel their agressive methods in the near future, especially bearing in mind the possibilities when the Panama canal is finished.

In commenting on the United States not getting its share of foreign trade, the president of one of our largest transportation interests said:

"We are dillydallying with South American trade and are trying to build the Panama canal. What good will come of it? We have not the ships, and freight rates to the East are against it. We have not the protecting laws for a merchant marine. I myself have recognized that condition and shall certainly never again build a ship under the American flag. Individual effort is restrained by political theorists and demagogue leaders. Compare our efforts with those of Germany. There the Emperor himself is at the head, guiding and fostering commercial development. We are falling behind in the precession, and five or ten years hence this country will deplore the present policy of political interference locally and nationally."

The Causes of Decadence.

It is generally admitted that the causes which have led to the decadence of our merchant marine are:

First: Higher cost price of all materials entering into construction of ships—and

Second: Higher cost of labor in construction and also of labor in operating.

Both of the causes originated in the policy of protection to American industries which has enabled the country to attain its present prosperous condition. By our laws now in force the officers of vessels under our flag must be American citizens, and, therefore, the pay for such officers is on a higher scale than the pay of men in similar capacity on ships of other nations. It is conceded that the operating expenses under the American flag is at least one-third greater than under the British flag and at least one-half greater than under the Norwegian flag. Also it is a known fact that under our laws crews are provided with better quarters and better food on American vessels than they receive on foreign vessels, yet crews on American vessels demand and receive higher wages in every department than the crews of foreign vessels.

There are thus two obstacles to overcome—the cost of production and the cost of operating—and the result must be obtained without disturbing the causes which have raised the obstacles. We must provide a means whereby an American ship can be built and operated at a profit to the owner, and though the cost is greater, the revenue derived from operation must be from competitive rates with vessels of other nations. To this end five solutions have been offered:

First: Allow foreign built vessels to enter free of duty.

Second: Allow rebate of portion of duties on goods imported in American vessels.

Third: Compensation for carrying the mails.

Fourth: Payment of allowance to shipowners building ships.

Fifth: Government aid through subsidy.

The first solution is repugnant. We pride ourselves that we can build as good ships as any nation and do, as a rule, turn out a better class of vessels than other nations. The St. Louis and St. Paul, the only two strictly high class transatlantic steamers built in this country and now in service, cost about $6,000,000 and their construction here certainly aided in the general prosperity, the mills turning out the steel, the mines the ore and coal, the forests the lumber, the merchants supplying the fittings and decorations, the manufacturers producing the supplies, the storekeepers selling the provisions and clothes to the workmen employed, and in effect, every individual industry was benefited by this vast sum being retained in circulation in this country. We cannot agree to free ships.

The second solution presents an extremely intricate question. If a proportion of duties were rebated when goods were imported in American ships, or a higher duty collected in goods imported in foreign ships, this would allow the shipowner to get higher rates, especially on goods on which the duty is heavy, but would not induce the carrying of cheap bulk cargo which constitutes two-thirds of the world's tonnage and on which the duty is little or nothing. Further, this discrimination would undoubtedly lead to complications through treaties in force with other nations who even now threaten reprisals on account of our tariff. This plan cannot be followed with any guarantee of success.

The third solution of compensation for carrying mails would probably cover the difficulty so far as high powered passenger vessels suitable for this purpose were concerned, but would not aid in the slightest degree the class of vessels we need—the ordinary cargo boat. Freight vessels to compete in transportation to all parts of the world must be of moderate speed to be economical, and, furthermore, there are many ports which can be reached more quickly by rail in part or in whole, and the amount of such aid extended for mail transportation would never be sufficient for the purpose. This plan is not broad enough to build up American tonnage.

The fourth solution provides for payment to the ship-

owner or the ship builder a sum of money per register or gross ton sufficient to offset the difference in price between foreign and American-built ships. As the cost prices both here and abroad are constantly changing, it would, to say the least, be difficult to arrive at a satisfactory basis for payment. Further the premium so paid would of necessity be different for each kind and class of vessel, and as this plan would not in any way overcome the added expenses of operating under the American flag and which would be a constant burden, the plan does not appear feasible.

A Practicable Plan.

The fifth solution of government subsidy presents a practicable plan which has been successfully proven. It is unfortunate that the only word to describe the method, through a misconception of its application, has, to the mind of the American public, a meaning which it is not intended to convey. A ship subsidy is not a raid on the public treasury, and is no more nor less than a carrying out of protective policy to American industries. A subsidy in this connection means an allowance to a ship owner to compensate him for the increased cost of building vessels and operating them under the American flag. It concerns directly the prosperity of our 80,000,000 inhabitants and has no place in the politics of any particular party—it is a national question of policy.

France makes no secret of the aid extended their ship owners, not only through mail contracts, but by subsidy per ton per mile. What the nature or amount of assistance that Germany and Japan give in this direction, is not definitely known. One hundred years ago 90 percent of our oversea trade was carried on in our own ships; today we carry about 22 percent, and have in tonnage about 100,000 tons less than in 1810. This does not make pleasant reading but it should direct the thoughts of every citizen to the cause and the remedy therefor.

It will cost about $800,000,000 to build and equip vessels sufficient to carry our $2,700,000,000 worth of export and import cargo, and of this sum over $700,000,000 will represent the materials of construction and the labor. Say that twenty years will elapse before the vessels are all completed, or building at a rate of $40,000,000 per year, a bounty of $10,000,000 per year based on vessels, tonnage and per mile is considered to be quite sufficient to meet the difference in cost and of operation as compared with foreign vessels. When it is considered that an American Mercantile Marine means the establishment of American shipping and commercial houses every place in the world, with its consequent opportunities for the increase of sale for our manufactured products, an outlet for our cotton, wheat and iron, and a means of keeping our increased production absorbed and our internal commerce in a healthy state, it does not seem that the amount is of any consequence compared with the resultant good to manufacturer, merchant, farmer and workman.

This solution of a bounty or subsidy or by whatever term we may call the aid extended, seems to be practicable. It will naturally require to be worked out to a system as to the amount to be allowed per ton per mile, for sailing vessels and for steamers, both cargo and mail. Once the method of getting the result is arrived at, it is comparatively easy to figure the increased cost of construction and operation and the equitable amount to be allowed to overcome these charges.

The subject of an all American mercantile marine is attracting attention in all parts of the country. Thinking men are devoting time and energy to its accomplishment, not from selfish motives, but in a liberal, broad-minded spirit, earnestly attempting to devise ways and means of carrying out the undertaking and to safeguard the interests of the country at large. Let us hope that their efforts will be well directed and be successful.

RUSSIAN IRON AND STEEL STATISTICS.

Through the courtesy of Mr. Adolphe Wolski, of the Statistical Department of the Ministry of Finance of the Russian Government, the American Iron & Steel Association has been enabled to compile the official statistics of the production of iron ore, coal, pig iron, steel ingots and castings, and steel rails in Russia and Finland for the last fifteen years.

Iron Ore.—The maximum production of iron ore in the Russian Empire was reached in 1900, when 6,112,090 metric tons were mined. The next highest years were 1899, when the production amounted to 5,890,900 tons, and 1904, when it amounted to 5,272,300 tons. In the following table the production of iron ore is given in metric tons, from 1890 to 1904:

Years.	Metric tons.	Years.	Metric tons.	Years.	Metric tons.
1890	1,795,663	1895	2,986,715	1900	6,112,090
1891	1,958,452	1896	3,321,786	1901	4,723,983
1892	2,044,106	1897	4,102,536	1902	3,987,303
1893	2,210,305	1898	4,536,217	1903	4,218,600
1894	2,524,610	1899	5,890,900	1904	5,272,300

Coal.—The production of coal in the Russian Empire was as follows from 1890 to 1904. The maximum production was reached in 1904.

Years.	Metric tons.	Years.	Metric tons.	Years.	Metric tons.
1890	6,085,080	1895	9,098,800	1900	16,135,600
1891	6,223,450	1896	9,384,900	1901	16,507,240
1892	6,946,200	1897	11,201,524	1902	16,431,440
1893	7,610,600	1898	12,333,500	1903	17,818,000
1894	8,762,600	1899	14,311,200	1904	19,318,370

Pig Iron.—Although the production of pig iron in the Russian Empire in 1904 was the largest in its history, the industry has made but little progress statistically since 1899, in which year the production was only 250,943 tons less than in 1904. In the following table the production of pig iron is given since 1890. Russia is a large importer of pig iron, her production in some years being only slightly in excess of her annual production of steel ingots and castings.

Years.	Metric tons.	Years.	Metric tons.	Years.	Metric tons.
1890	927,214	1895	1,453,529	1900	296,191
1891	1,005,570	1896	1,607,490	1901	2,869,306
1892	1,072,651	1897	1,881,670	1902	2,597,435
1893	1,147,391	1898	2,243,081	1903	2,486,610
1894	1,348,615	1899	2,727,382	1904	2,978,325

Steel Ingots and Castings.—In the following table will be found the production of all kinds of steel ingots and castings in Russia from 1890 to 1904. Over two-thirds of the steel now made annually in the Russian Empire is produced by the open-hearth process. The production of steel castings by the Bessemer and open-hearth processes amounts to from 35,000 tons to 40,000 tons annually. About 2,000 tons of steel ingots and castings are also annually produced by the crucible process. In addition from 5,000 tons to 6,000 tons of steel are annually made by various minor processes. The growth of the Russian steel industry from 1890 to 1904 has been remarkably strong and steady.

Years.	Metric tons.	Years.	Metric tons.	Years.	Metric tons.
1890	278,422	1895	880,451	1900	2,217,752
1891	440,212	1896	1,023,118	1901	2,230,000
1892	516,315	1897	1,225,526	1902	2,183,400
1893	633,120	1898	1,621,801	1903	2,410,938
1894	726,017	1899	1,903,000	1904	2,811,948

Steel Rails.—The production of steel rails in Russia has been as follows, in metric tons, from 1890 to 1904. The maximum production was reached in 1900, when 496,475 tons were rolled.

Years.	Metric tons.	Years.	Metric tons.	Years.	Metric tons.
1890	166,156	1895	302,428	1900	496,475
1891	166,503	1896	398,848	1901	481,918
1892	193,338	1897	444,062	1902	382,152
1893	230,954	1898	468,787	1903	332,367
1894	250,190	1899	464,377	1904	401,541

WORLD'S PRODUCTION OF PIG IRON AND STEEL IN 1903.

The following table, computed by the American Iron & Steel Association, gives revised statistics of the production of pig iron and steel in all countries in 1903, except in one instance, when figures for 1902 are given for steel. English tons of 2,240 lb. are used for the United States, Great Britain, Canada, and "other countries," and metric tons of 2,204 lb. for all other countries, metric tons being used as the equivalent of English tons in ascertaining the total production for all countries. The statistics of steel production for the United States, Great Britain, Germany and Luxemburg, France, Belgium, Austria-Hungary, Russia and Finland, Sweden, Spain, Italy and Canada embrace ingots and in some cases direct steel castings.

Countries.	Pig iron.			Steel.		
	Years.	Production. Tons.	Per-centage.	Years.	Production. Tons.	Per-centage.
United States	1903	18,009,252	38.83	1903	14,534,978	40.51
Great Britain	1903	8,935,063	19.27	1903	*5,134,101	14.31
Germany and Luxem.	1903	10,085,634	21.75	1903	8,801,515	24.53
France	1903	2,840,517	6.13	1903	1,885,000	5.25
Belgium	1903	1,216,500	2.62	1903	969,230	2.70
Austria-Hungary†	1903	1,428,158	3.08	1902	‡1,193,000	3.32
Russia and Finland	1903	2,486,610	5.36	1903	2,410,938	6.72
Sweden	1903	506,825	1.09	1903	318,897	.89
Spain	1903	302,657	.65	1903	199,642	.56
Italy	1903	‡75,279	.16	1903	187,361	.52
Dominion of Canada	1903	265,418	.57	1903	181,514	.50
Other countries (about)	1903	229,087	.49	1903	66,824	.19
Total	.....	46,381,000	100.00	.....	35,883,000	100.00

*Does not include direct steel castings. †Includes Bosnia and Herzegovina.
‡Not including blast furnace castings. ‡Estimated. Official figures wanting.

In tables that have appeared in previous issues of the association's annual report was given the world's probable total production of pig iron in 1800 as 825,000 English tons; in 1830 at 1,825,000 tons; in 1850 as 4,750,000 tons; in 1870 as 11,900,000 tons; in 1880 as 17,950,000 tons; in 1890 as 27,157,000 tons; in 1900 as 40,400,000 tons; and now our estimate for 1903 is 46,381,000 tons. If metric tons are reduced to gross tons the percentage of the United States in 1903 will be a little over 39 percent.

In one of the early annual reports the association estimated the world's production of steel in 1878 as amounting to 3,021,000 English tons. Subsequently it estimated the production in 1889 as amounting to 10,948,000 tons. The above figures show that the world's production of steel had increased in 1903 to 35,883,000 tons. If gross tons only are considered the percentage of the United States in 1903 will be a little less than 41 percent.

Mitchell Predicts Coal Agreement.

According to John Mitchell, president of the United Mine Workers of America, the following will be the next agreement with the united coal operators:

"First, a recognition of the Miners' Union by the coal operators, the recognition to take the form of a signed agreement.

"Second, the substitution of an eight-hour work day for the nine-hour work day awarded by the strike commission, which is in force throughout the hard coal fields.

"Third, an increase in pay over the minimum wages now paid to men and boys who are not contract miners, but are generally classed as unskilled labor.

"Fourth, a uniform scale of wages for workers, not actually miners, at all collieries."

It is estimated by experts that the adoption of a like agreement will increase the cost to consumers 50 cents per ton.

WORLD'S PRODUCTION OF IRON ORE AND COAL IN 1903.

The following table, compiled by the American Iron & Steel Association gives revised statistics of the production of iron ore and coal in all countries in 1903, except in two instances, when figures for other recent years are given. English tons of 2,240 lb. are used in giving the production of the United States, Great Britain, Canada, Cuba, India, Natal, Transvaal, New South Wales, New Zealand, "other Australasia" and "other countries," and metric tons of 2,204 lb. are used for all other countries named in the table, the latter being used as the equivalent of English tons in ascertaining the total production of all countries. Belgian coal statistics do not include lignite.

Countries.	Iron ore.			Coal and lignite.		
	Years.	Production. Tons.	Per-centage.	Years.	Production. Tons.	Per-centage.
United States	1903	35,019,308	34.95	1903	319,068,229	36.48
Great Britain	1903	13,715,845	13.69	1903	230,334,469	26.34
Germany and Luxem.	1903	21,230,650	21.19	1903	162,457,253	18.57
France	1903	6,219,541	6.21	1903	34,906,418	3.99
Belgium	1903	184,400	.18	1903	*23,796,680	2.72
Austria-Hungary†	1903	3,269,175	3.26	1903	40,628,785	4.65
Russia and Finland	1903	4,218,600	4.21	1903	17,818,000	2.04
Sweden	1903	3,677,841	3.67	1903	320,390	.04
Spain	1903	8,304,153	8.29	1903	2,800,843	.32
Italy	1903	374,790	.37	1903	346,887	.04
Dominion of Canada	1903	235,977	.24	1903	6,824,999	.78
Cuba	1903	624,858	.62	.....	.....	.....
Transvaal	.....	.....	.....	1903	2,012,211	.23
Natal	.....	.....	.....	1903	713,548	.08
India	1902	85,235	.09	1903	7,438,386	.85
Greece	1903	360,310	.36	1903	10,700	.00
New South Wales	1903	22,120	.02	1903	6,354,846	.73
New Zealand	.....	.....	.....	1903	1,420,193	.16
Other Australasia	1903	52,707	.05	1903	760,158	.09
Japan	1901	70,172	.07	1903	10,083,845	1.15
Algeria	1903	588,893	.59	1903	140	.00
Other countries (about)	1903	‡1,943,625	1.94	1903	6,518,020	.74
Total	.....	100,198,000	100.00	.....	874,620,000	100.00

*Lignite not included. †Includes Bosnia and Herzegovina.
‡Includes 568,795 gross tons mined by Newfoundland in 1903.

The Bulletin, of the Iron & Steel Association says:

"We have estimated the world's production of iron ore as amounting in 1880 to about 43,359,000 tons, in 1890 to about 57,474,000 tons, in 1900 to about 90,000,000 tons and in 1903 to about 100,198,000 tons, the contribution of the United States in the latter year amounting to 35,019,308 tons, or 34.95 percent.

"We have also estimated the world's production of coal and lignite as amounting in 1873 to about 262,567,000 tons, in 1883 to about 398,012,000 tons, in 1894 to about 552,650,000 tons, and in 1903 to about 874,620,000 tons, of which the United States produced in the latter year 319,068,229 tons, or 36.48 percent."

Wm. Steele & Sons, of Philadelphia, Pa., have been granted permits to erect two foundry buildings, one two stories in height and 36 x 150 ft., and the other one story in height, 46 x 150 ft., for Schaum & Uhlinger. The buildings will cost $35,000.

The W. F. Trimble Co., Pittsburg, has been given the contract for the new Pittsburg freight house of the Pennsylvania Railroad Co. A brick and steel building 26 x 720 ft. will be erected at a cost of $65,000. The contract for a four-story freight and storage warehouse to cost about $500,000 will be let later in the year.

Stanford University, California, will shortly begin work on a new building to make room for a course of instruction directly related to the present methods of engineering. Elaborate shop machinery will be installed in charge of W. F. Durand, professor of mechanical engineering.

NEWS FROM MANY INDUSTRIES.

New Buyers :—

The D. T. Williams Valve Co., Cincinnati, O., has increased its capital stock from $50,000 to $100,000.

The American Envelope Machine Co., Holyoke, Mass., has been incorporated with a capital stock of $1,000,000.

The Cherry Tree Iron Works, Grant, Clearfield county, Pa., has been incorporated with $50,000 capital stock.

The Eastern Supply Co., Portland, Me., has been incorporated with a capital of $50,000 to handle plumbing and mill supplies and high and low pressure tubular boilers.

The Banner Stove & Mfg. Co., of St. Louis, Mo., has been incorporated with a capital of $10,000. The incorporators are James H. Howe, Arthur G. Hildreth and Wm. H. Eckert.

The Printers' Chase & Machine Works, Chicago, has been incorporated with a capital of $6,000. The incorporators are Swan J. Vernstein, Claus R. Peterson and John Flaherty.

The Silverton Foundry Co., Denver, Colo., has been incorporated with a capital of $20,000. The incorporators are M. F. Michaels, W. H. Thorp and C. T. Mead.

The McNeal Machinery Co., Joplin, Mo., has been incorporated with a capital stock of $100,000. The stockholders are H. H. McNeal, F. M. Sharp and F. M. Sharp Jr.

The Miners' Foundry & Supply Co., of Carterville, Mo., has been incorporated with a capital of $50,000. Among the incorporators are W. B. Kane, Chas. P. Wallace and A. R. Lively.

The Ewart Mfg. Co., Indianapolis, Ind., has been incorporated to manufacture and sell all kinds of machinery. The directors are Alfred A. Pope, John H. Whittemore, Thomas B. Marston, Avery Crouly and Glen G. Howe.

The Shelby Safety Switch Co., Shelby, has been incorporated with $10,000 capital stock. The incorporators are W. R. Cochran, T. J. Edwards, Asa Fish, W. H. Myers and Jones Feighner.

Chas. Amos & Co., wire and iron goods manufacturers, have been incorporated with a capital stock of $50,000. The incorporators are Charles B. Amos, Elizabeth J. Amos and Henry C. L. Forler.

Bids will be received Oct. 2 by Andrew Hill, clerk, Homestead, Pa., for the furnishing and installing of one 150 h. p. tubular boiler with steel stack and foundations in the borough's water works plant.

The Buckeye Motor Mfg. Co., Dayton, O., has been incorporated with $10,000 worth of capital stock by John H. Rose, William E. Good, Laura J. Rose, John H. Rose Jr., and William H. Miller.

The Ohio Machine & Power Co., Cleveland, has been incorporated with $30,000 capital stock by M. H. Nason, C. R. Miller, T. A. Classe, G. B. Spanner and William Rothenberg.

The Sager Drill Socket Co., Albany, N. Y., has been incorporated with a capital of $10,000 to manufacture drill sockets. The incorporators are: George A. Sager, William Marx and Louis Marx, all of Albany, N. Y.

The International Electric & Mfg. Co., Milwaukee, Wis., has been organized with a capital stock of $300,000 to take over the option of the Milwaukee Engineering Co. on the plant and business of the Milwaukee Electric Co., in West Allis.

The Pennsylvania Steel Tie Co., has applied for a charter and will erect a plant in the Pittsburg district. The incorporators are: W. W. Mechling, Jacob E. Smith and Frederick Howden, all of Homestead. Mr. Mechling was formerly connected with the Carnegie Steel Co., at Homestead, as department superintendent.

The International Register Co., Columbus, O., has been incorporated with a capital stock of $25,000. The incorporators are J. C. Burns, O. C. Wagner, H. S. Kerr, G. E. Walsh and M. I. Reed. The company will make and sell machine supplies and fixtures of wood and metal, erect and equip shops, factories, mills, etc.

The Long Beach Foundry & Machine Shop Co., Los Angeles, Cal., has been incorporated with a capital stock of $25,000. The incorporators are Claude N. Waite, Albert Nelson, Charles R. Jordan, Thomas M. Cunningham and Ralph Van Hove.

The Audet Novelty Tool Works, Williamsport, Pa., has applied for a charter. The company proposes to manufacture novelties made from iron and steel, tools, light castings and machinery equipment. A. N. Audet, Theodore Audet, W. J. Brennan and J. F. Brennan are the applicants.

The Morrison-Tyler Motor Co., Boston, has been incorporated with a capital of $40,000, to manufacture motors, etc. The incorporators are: A. E. Morrison, president, 1138 Boylston street; Frank J. Tyler, treasurer, 16 Sidlaw road; and A. P. Teele, 42 Court street, all of Boston.

The Stearns Co., Erie, Pa., has been incorporated to manufacture locomotives, engines, boilers and all kinds of machinery or parts made of iron, steel or other metal or wood. The capital stock is $100,000, and the incorporators are: F. F. Curtze, Francis Carrick, Adelp A. Claus, G. L. Swabb and John Walton, all of Erie. Mr. Claus is the treasurer.

The Willamette Iron & Steel Works, Willamette, Ore., has filed supplementary articles of incorporation authorizing an increase in the capital stock from $125,000 to $300,000. It is also making extensive improvements and additions to its plant. The present blacksmith shop will be converted into an additional space for machine tools, and a forging department 50 x 75 ft. will be built, the foundry being extended to meet the new shop. A 10-ton electric crane will be part of the foundry equipment.

Fires:—

The foundry of John Kleuk, 1829 South Water street, Philadelphia, suffered a loss of $500 by fire Sept. 11.

Another unsuccessful attempt to dynamite the plant of the West Side Foundry in Colonie, Troy, N. Y., was made Sept. 12, small damage resulting.

The Chatfield Brass & Iron Foundry's plant at Escanaba, Mich., completely destroyed by fire Sept. 12, will be rebuilt at once.

Fire which broke out in the plant of the Hayes Iron Foundry, Lynn, Mass., Sept. 9, caused heavy damage, especially in the electrical department. A number of valuable castings which had just been poured were destroyed by water being turned on them. Sparks from the foundry chimney caused the fire.

The plant of the Featherstone Foundry & Machine Co., Chicago, was visited by fire Sept. 14, when damage estimated at more than $150,000 was done. The blaze started in the pattern room on the third floor, destroying the heavy stock of wooden patterns there and damaging the machinery on the first and second floors. A number of men and girls employed on the upper floor narrowly escaped suffocation. It is believed that the fire was caused by crossed electric wires. The foundry is one of the oldest in the city and the patterns consumed were an accumulation of 30 years. Heavy insurance was carried.

New Construction:—

The Rowbottom Machine Co., Waterbury, Conn., is putting up a one-story addition to its factory. Orders for equipment and tools have all been placed.

The Riverside Metal Co., Riverside, Pa., is seeking estimates for the erection of a one-story steel frame rolling mill 100 x 180 ft.

A steel dam 80 ft. high is to be constructed across the Missouri river at Helena, Mont., for the Helena Power Development Co.

The American Car & Foundry Co., Berwick., Pa., is preparing plans for a new car finishing building to cost about $100,000.

Shartle & Bevis will install a modern foundry plant at Middletown, O., in the building now occupied by Ritter & Keuthan.

The Michigan Iron Co. is building six new kilns at the Newberry furnace at Newberry, Mich., which will make a total of 58 90-ton kilns.

J. H. Emery will erect a foundry and machine shop at Bay City, Mich., for the manufacture of the Emery brick cement machine.

Work on the Great Northern shops, at Minot, will be commenced immediately, and will probably be completed by June 1. The shops will be the largest on the system.

R. B. Seidel, Inc., Philadelphia, has purchased the property adjoining its present plant and has erected a new office building thereon.

The Western Steel Car & Foundry Co. will add a malleable cast iron foundry costing $50,000 to its plant in Anniston, Ala., where its foundry was destroyed by fire a few years ago.

The Marion Steam Shovel Co., Marion, O., is to build large boiler and carpenter ships of brick construction, modernly equipped, and is planning other improvements. Its buildings and yards now cover about 25 acres.

The Union Twist Drill Co., Athol, Mass., has closed a contract with J. J. Prindiville, South Framingham, Mass., for its one-story building 60 x 180 ft. to be used for storage of steel, blacksmith shop, cutting-off department, hardening and annealing rooms.

The Bois Sheet Steel Stair Co., whose incorporation was mentioned recently, has started a plant at 50 Vestry street, New York city, for the manufacture of a patent steel stair structure officially approved by the New York Bureau of Buildings. A light stair with increased security through the distribution of weignt upon the structure is claimed for the new article. The officers of the company are: Daniel Petigor, president; John L. Jordon, secretary, and Nathaniel Bois, treasurer.

The New York State Steel Co., Buffalo, N. Y., recently incorporated with a capital stock of $1,000,000 has purchased 25 acres of land on Buffalo river near the Lake Shore tracks on which a plant will soon be erected for the purpose of turning out structural steel from the product of the Lackawanna Steel Co. The directors are: Spencer Kellogg, A. L. Schultze, Stuart R. Mann, William M. Evarts and Whitney G. Case, and others. Mr. Schultze was formerly manager for the Pittsburg district of the American Bridge Co.

General Industrial Notes:—

The new Merchant Iron Mill at Utica, N. Y., is now in operation and will soon employ about 200 men.

The Niles-Bement-Pond Co., New York, will build $75,000 worth of machinery for the Oregon Short Line main shops at Pocatello, Idaho.

Ten large freight locomotives for the Philadelphia & Reading Railroad Co. will be built at once in the company's shops at Reading, Pa.

The Rock River Mfg. Co., of Dixon, Ill., has commenced work again and believes that the plant will continue in operation throughout the rest of the year.

The South foundry of the Allis-Chalmers Co., at Milwaukee, Wis., which has been idle for some time, is now in operation and giving employment to 500 men.

The High Point Pipe & Foundry Co., of High Point, N. C., has started up its foundry and made its first shipment of pipe on Aug. 29.

The Marting Iron & Steel Works, Ironton, O., is casting about 240 tons of iron daily, working day and night shifts.

The Niles furnace, Newcastle, Pa., which has been out of blast since June 1, has resumed operations, re-employing about 175 men.

Fires have been started in all the newly-built furnaces of the Portsmouth Steel Co., New Boston, O., preparatory to the operation of the mill.

The Mexican Car & Foundry Co. will build mine cars in addition to freight and passenger coaches at its new shops at Hutchinson, Mex.

Advices from Santiago, Chili, are that the Chilian Government is soliciting bids in the United States for the building of a number of heavy dredges, specifications of which have been sent to Senor Don Joaquin Walker-Martinez, the minister from Chili, at Washington, D. C.

The selection of a place for the next convention of the Master Car Builders and Railway Master Mechanics' Association is in the hands of the following committee, whose recommendation will be submitted shortly: A. E. Mitchell, superintendent of motive power, Lehigh Valley, South Bethlehem, Pa.; G. W. Wildin, mechanical superintendent, Erie, Meadville, Pa.; F. K. Shults, the Supply Mens' Association, 95 Liberty street, New York. Niagara Falls, Saratoga and Manhattan Beach are places that have been considered.

Trade Notes:—

The Lufkin Foundry Co., Lufkin, Texas, has ordered complete machinery equipment at a cost of about $8,000.

The Coosa Pipe Foundry Co., Gadsen, Ala., has its new plant in operation with orders plentiful.

S. R. Dresser & Co., Bradford, Pa., has secured a lease of the National Tube Co., at Oil City, and will manufacture oil well couplings employing about 100 men.

The Caldwell & Drake Iron Works, Columbus, Ind., has shipped to Louisville, Ky., the second largest steel truss ever manufactured in the United States.

The Buffalo Forge Co., through its London branch, has secured the contract for heating and ventilating the buildings of His Majesty's dockyards, Portsmouth, England.

The Dayton Pneumatic Tool Co., Dayton, O., has received an order from the American Car & Foundry Co. for 50 No. 88 1⅛ x 8 in. "Green" long stroke riviting hammers.

The Halstead Steel & Iron Co., Chicago, has been given the contract for the steel work on the Colorado Telephone Co.'s building, Denver.

Announcement is made that the business of the Weston-Mott Co., Utica, N. Y., will be removed to Flint, Mich Work on the Flint plant will be commenced shortly.

The Westinghouse Machine Co., East Pittsburg, will build for the Detroit Public Lighting Commission a Westinghouse-Parsons steam turbine of 3,000 h. p. with an electric generator of the same capacity.

The Baldt Steel Casting Co., Newcastle, Pa., is rushing work on a 1,000 ton order for the Baldwin Locomotive Works, Philadelphia. The order includes engines, frames, driving wheels, splash plates and heavy driving boxes.

The Sterling Boiler Co., Chicago, has been given the contract for a battery of 20 boilers of 400 h. p. each for the Youngstown Sheet & Tube Co., Youngstown, O. The Filer-

Stowell Co., Milwaukee, Wis., will build two 5,000 h. p. engines for the Youngstown plant.

The plant of the American Foundry & Machine Co., of Ravenna, O., has been sold to Albert C. Hays, of Pittsburg, who will organize the Reeves Centrifugal Engine Co., for the manufacture of steam, gas and gasoline engines.

The Charles E. Dustin Co., 11 Broadway, New York city, dealer in electrical and steam machinery, has removed all its material formerly stored in Orangeburg, N. Y., to Jersey City, N. J., where the company has purchased the large works formerly occupied by the Spiral Riveted Tube Co.

The National Car Wheel Co. is soon to remove its plant from New York to Pittsburg. It recently reorganized, electing J. D. Rhodes, president, to succeed C. T. Chapin, and G. P. Rhodes, treasurer, succeeding W. T. Goodnow, with C. A. Maher as secretary. The company owns and operates plants at West Homestead, Pa.; Cleveland, Rochester, N. Y., and Tioga, N. Y., with a capacity of 1,000 car wheels a day.

The Knoxville Iron Co., Knoxville, Tenn., is shipping to Panama 65,000 lb. of bar iron which has passed the government triple test. The Knoxville Co. has secured an injunction against the Crucible Steel Co. and the Black Diamond Steel Works to prevent interference with its employes. The claim was set up that a number of workmen were persuaded to leave through offers of railway fare and cash bonus and other inducements.

Dravo, Doyle & Co., Pittsburg, report the following sales: To the Northern Cambria Street Railway Co., Patton, Pa., two 18 x 30 x 24-in. Ball tandem compound direct-connected engines; for the Col. Henry Schmulbach building, Wheeling, W. Va., a complete electric light plant, including three Ball engines direct connected to 100 k. w. generators; to the Cleveland Provision Co., Cleveland, one 11 x 19 x 14-in. Ball tandem compound direct-connected engine; to the New River & Pocahontas Consolidated Coal Co., three 21 x 34 x 24-in. Ball cross compound engines direct connected to 300 k. w. generators; for the Arcade building, Cleveland, two 16 x 25 x 20-in. Ball tandem compound engines direct connected to generators; to the Branznell Gas Coal Co., Pittsburg, complete power plant, consisting of boilers, engine, Cochrane heater and Cochrane separators. They also report a good business in De Laval steam turbines, steam and motor driven turbine pumps.

J. W. Duntley, president of the Chicago Pneumatic Tool Co., returned on Sept. 8 from Europe, where the past six weeks were spent in the interest of the foreign business. While abroad the Fraserburgh and Berlin factories were started and manufacturing arrangements perfected in Russia. All factories are now running in good shape with sufficient business to keep them constantly occupied for several months, and the outlook generally is the most satisfactory of any period in the history of the company. Mr. Duntley states the foreign business promises during the next few years to rival the American business. Domestic inquiries are extremely heavy for all classes of tools and appliances, as well as compressors. Many large orders for compressors and tools have been received recently, among which were the following: Compressor and complete equipment of pneumatic tools for the Western Steel Car & Foundry Co., Hegewisch, Ill., three compressors, each with 750 cu. ft. capacity for the Baltimore & Ohio railroad, one 2,000-ft., one 1,000-ft. compressor for the Huntington shops of the Chesapeake & Ohio railroad, one 1,200-ft. compressor for the Norfolk & Western railroad, one 1,225-ft. compressor for Otis Steel Co., Cleveland, and one 165-ft. and two 425-ft. compressors for Bartlett & Hayward, Baltimore, Md. Total of 157 Franklin compressors has been sold during the past 90 days.

MANY MORE CAR ORDERS

Placed on the Books—Union Pacific Will Build Its Own Locomotives.

The Erie railroad gave an order on Sept. 8 for the construction of 3,000 steel underframe box cars. This is in addition to the 2,000 cars now building by the American Car & Foundry Co., 400 of which have just been delivered.

The Union Pacific will in future build its own locomotives and will construct locomotive works in Omaha. General Manager Mohler said: "The Union Pacific will spend $375,000 on the locomotive shops, and work will begin at once. Mr. Harriman looked over the plans before his departure for the Orient and ordered their construction."

Orders have been placed for cars as follows: The Tennessee Coal, Iron & Railroad Co., 600 mine cars from Foust & Gilbert, Birmingham, Ala.; the Boston & Maine, seven passenger cars from the Laconia Co.; the Southern, 20 passenger cars from the American Car & Foundry Co., five from the Pullman Co. and four from the St. Louis Car Co.; the Charleston (S. C.) Mining & Mfg. Co., through the Cameron & Barkly Co., 30 flat cars from the South Atlantic & Mfg. Co.; the Green Bay Traction Co., Green Bay, Wis., two interurban cars from the St. Louis Car Co. for September delivery; the Kankakee Electric Railway Co., Kankakee, Ill., 32 single truck passenger cars from the St. Louis Car Co. for October delivery; the Colorado & Southern, 200 Ingoldsby dump cars from the Pullman Co. for December delivery; the Orange & Northwestern, 50 standard logging cars from the Beaumont Iron Works, Inc., Beaumont, Texas, for October delivery; the Mexican Central, 20 passenger coaches from Barney & Smith, and 40 steel tank cars, with wooden underframes for carrying fuel oil, from the American Car & Foundry Co. The Elgin & Belvedere Electric is in the market for eight cars. The Kansas City Southern is figuring on five chair, two combination passenger and mail, and one combination mail and express car. As reported in our issue of Sept. 7, the Kansas City Southern has ordered 1,000 box cars from the American Car & Foundry Co.

The following orders have been placed for locomotives: The Hocking Valley, nine locomotives from the American Locomotive Works; the Delaware, Lackawanna & Western, five passenger locomotives from the American Locomotive Co.; the Cuba Co., six 10-wheel locomotives from the American Locomotive Co.; the Lehigh Valley, 10 simple freight locomotives from the Schenectady Works of the American Locomotive Co. The Intercolonial has been authorized by the Dominion government to purchase 40 locomotives from Canadian firms.

The Cleveland Electric Railway Co. is ready to place an order for 50 new cars to be delivered the coming spring.

At the recent annual meeting of the Boston & Maine railroad, announcement was made that improvements costing $8,700,000 would be started immediately, the money being obtained by an issue of treasury stock. The freight equipment will require about $5,000,000 and improvements and extensions in the company's shops will also be made.

The Reading & Jersey Central railroads have placed an order for 11,000 freight cars with the Standard Steel Car Co., Butler, Pa. Of these 100 are to be steel flat cars and the remainder steel hopper coal cars.

The Standard Steel Car Co., Butler, Pa., is working on two mail and express cars for the New York, New Haven & Hartford railroad.

The next meeting of the Ohio Society of Mechanical, Electrical and Steam Engineers will be held at Canton, O., Nov. 17 and 18. C. J. Miller, secretary, is preparing the program.